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ABSTRACT

Two problems encountered in cooperative vocational education programs concern the scope and the rate of employer-provided training. A project was conducted to enable teacher-coordinators to more effectively evaluate and help to improve the training provided by employers by developing two management tools: occupational task structures and training-time standards, specifically for food service occupations. Development of task structures involved six steps: needs analysis: a review of existing task analyses and competency-based materials: selection of occupations: format development: task inventory construction: and content validation. Task structures were developed for occupations of cook/chef: waiter/waitress: kitchen helper: short-order cook: and counterperson. Training-time standards were developed through a process of selecting the most appropriate method for deriving individual estimates of times, developing individual estimates, and developing training-time standards through a consensus of the subject-area experts involved in the process. (Task structures and training-time standards for the five food service occupations, along with a field test for them, are attached to the report.) (KC)

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METIS ASSOCIATES INC.

The Development of Occupational Task Structures and Training-Time Standards for Cooperative Vocational Education

Final Report

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In partial fulfillment of Contract PS 79-1908

July 31, 1980

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- Russel Hebblewaite, Brand Rex Company, Manchester, CT.;
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- Ellen N. Winer, Director of the Center for Secondary School Work Experience Education, Northeastern University, Boston, MA.

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- Frank Lucente, CWE-DO Teacher-Coordinator,
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- Frank Gronda, Food Trades Department Head,
  E.C. Goodwin Regional Vocational Technical School,
  New Britain, CT.; and
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  Manchester Community College,
  Manchester, CT.

Preface

On May 23, 1979, Metis Associates, Inc. was retained by the Connecticut State Department of Education to develop occupational task structures and training-time standards for Cooperative Vocational Education. From July 1, 1979 through June 30, 1980, under Contract P.S. 79-1908, Metis Associates:

> "...develop(ed) instruction models that will assist teachers of cooperative vocational programs to improve the quality of their students' out-of-school training experiences..."

This final report is submitted to the State Board of Education and the Division of Vocational Education in partial fulfillment of the requirements of this contract.

Executive Summary

The cooperative approach to providing vocational education may be defined generally as an arrangement in which an employer cooperates with a local education agency or other public sponsor to provide training at the employer's place of business. This training is coordinated with education that is delivered by the sponsoring local education agency. In the State of Connecticut, approximately 3,000 students are enrolled in locally administered cooperative work education programs for diversified occupations (CWE-DO).

A variety of advantages over conventional in-school approaches have been cited for cooperative work education programs, including greater relevance of training, lower capital and operating costs, increased education motivation, and a better record of job placement. In recent years, the cooperative approach has received increasing national attention and financial support. Tax credits have been made available, at both federal and state levels, to defray the cost of salaries that employers pay to students receiving training. These tax credits are expected to be an important incentive to employers for participating in cooperative programs.

The effectiveness of cooperative programs is substantially dependent upon the quality of the training provided by the employer training station. For this reason, local education agencies are responsible for approving the employers that participate in the cooperative program, for assisting employers to become better trainers, and for monitoring and evaluating each student's out-of-school training progress.

Two problems encountered by local education agencies in cooperative programs concern the scope and rate of the employer-provided training. The employer training station may not be able to provide training for a sufficient variety of tasks to justify a lengthy student placement, or the pacing (i.e., rate of training) may be unacceptably slow. These problems are exacerbated in cooperative programs which cover a diversity of occupations. Because the program's teacher-coordinators cannot possibly be expert in all of the occupations for which training is provided, a tendency exists to allow employers to determine unilaterally both the scope and rate of training.

The Connecticut State Department of Education seeks to develop management tools that will enable teacher-coordinators to more effectively evaluate and help to improve the training provided by employer training stations. This report describes the results of a project whose purpose was to develop two such management tools: occupational task structures and training-time standards. In developing these management tools, emphasis has been placed on cooperative programs for food service occupations, however the methodology established for developing them can be applied to other occupations as well.

Occupational task structures would serve to inform teacher-coordinators of the occupational tasks that need to be mastered for successful performance within a given occupation. The task structure is intended to provide the teacher-coordinator with a variety of information about each task, so that the coordinator can work with the employer to determine the tasks that should be included in each student's training program.

Training-time standards are intended to provide an objective basis for teacher-coordinators to estimate the amount of time that students should remain at their training stations.

Together, these management tools can provide teacher-coordinators with a basis for determining the content and duration of training. With these management tools, teacher-coordinators;

- Would be less dependent on their personal expertise and knowledge regarding all of the occupations included in their programs;
- Would be less dependent on the judgment of employers; and
- Would be in a better position to insure that training remains the major purpose of the out-of-school work experience.

The selection of occupations for which task structures and training-time standards were developed was mutually agreed to be the Division of Vocational Education of the Connecticut Department of Education, the Project Advisory Committee, and Metis Associates. The selection of occupations was based upon the needs of the CWE-DO program as defined by the State Department of Education and on the availability of relevant task analyses and competency-based curricula from which the task structures and training-time standards were to be developed.

Results

Task Structures

The development of task structures was essentially a six-step process that included: needs analysis; a review of existing task analyses and competency-based materials; selection of occupations; format development; task inventory construction; and content validation. Each of these steps are described in the body of the report.

The following five occupations were finally selected for the development of task structures and training-time standards: cook/chef; waiter/waitress; kitchen helper; short-order cook; and counterperson. The format developed for the task structures follows.

Format for Task Structures

Occupation: ______________

Tasks	(1) Checklist	(2) Relative Importance (1-7)	(3) Entry Level (E) or Advanced (A)	(4) Training Time Expressed In Hours	Related Occupations (5) Occ. #1	Related Occupations (6) Occ. #2	Related Occupations (7) Occ. #3	Related Occupations (8) Occ. #4
•								
•								
•								
•								
•								

For a given occupation, the inventory of occupational tasks would appear on the left half of the form; task specifications pertaining to relative importance (coded 1-7), skill level (coded E, A or E/A), and training time (expressed in hours) would appear in columns (2) through (4) respectively; and an X would appear in columns (5) through (8) whenever a given task was also required for training in one or more of the other related occupations. A checklist is also included in the form (column (1)) so that teacher-coordinators can indicate which skills a particular training station is equipped to teach.

Metis Associates, in conjunction with a panel of food service specialists, compiled task structures for each of the five food service occupations. These task structures are attached to this report.

Training-Time Standards

The development of training-time standards required the assistance of the same subject-area specialists who were involved in the development of the other elements of the task structure. The specialists were led by Metis Associates through a three-step process that included: selecting the most appropriate method for deriving individual estimates; developing individual estimates; and developing training-time standards through consensus.

The food service specialists tested two competing individual estimation procedures--absolute estimation and relative magnitude estimation, on a sample of occupational tasks. On the basis of data derived from this test, the absolute estimation procedure was selected as the more appropriate method for deriving individual training-time estimates. This method was then utilized by the experts for the development of individual estimates for each task in the task structures. The use of this method is strongly supported by the consistency of the ratings between judges (the interrater reliability coefficient for a sample of 193 tasks is .8614).

After the panelists recorded their individual, absolute estimations, they shared them with each other, discussed any discrepancies, and developed consensually-shared absolute estimates for each task. These became the training-time standards that are included in the task structures attached to this report.

Recommendation

Metis Associates recommends that a field test be executed prior to carrying out any further development of task structures and training-time standards because the results of the field test would reveal ways to strengthen the methodology for developing these management tools.

The methodology should be tested in the field and, if necessary, revised before large-scale implementation is carried out.

A sample of local food services CWE-DO programs, students, and training stations would participate in the field test. Problems in using the management tools, and an assessment of the extent to which the management tools have been effective in helping teacher-coordinators to establish a greater training emphasis at their stations, will be among the outcomes of this activity. A design for this field test is attached to this report.

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  Short-Order Cook (internally numbered SOC-1 through SOC-14); and
  Counterperson (internally numbered CP-1 through CP-9).
- Field Test Design (internally numbered 1 through 17)

I. Introduction

This report describes the development of two inter-related management tools for Connecticut's Cooperative Work Experience Programs for Diversified Occupations (CWE-DO). These tools are:

- Occupational task structures that link occupational tasks to the occupations for which CWE-DO programs provide training; and
- Training-time standards that may be used in estimating the duration of on-the-job training.

The following section of this report (Section II) describes: the cooperative approach to occupational education; Connecticut's CWE-DO program; and the problems to be addressed by the two management tools listed above.

Section III contains the rationale for Metis Associates' approach to addressing the problems described in Section II.

Section IV describes the objectives, design concepts and methods that were proposed for undertaking the development of the two management tools.

Section V details the results of the work. Part A of Section V is devoted to procedures for developing occupational task structures, Part B to procedures for developing training-time standards, and Part C to procedures for using and field testing the management tools.

The following major products are included among the appendices to this report. Each product is internally numbered so that it may be separated from the appendix and used independently of the report.

- Occupational task structures and objective training-time standards for each of the following food service occupations:
  - Cook;
  - Waiter/Waitress;
  - Kitchen Helper;
  - Short-Order Cook; and
  - Counterperson.
- Field Test for the Implementation of Task Structures and Training-Time Standards for Cooperative Vocational Education.

II. Background and Problem Statement

A. The Cooperative Approach to Occupational Education

The cooperative approach to providing vocational education may be defined generally as an arrangement in which an employer cooperates with a local education agency or other public sponsor to provide training at the employer's place of business. This training is coordinated with education that is delivered by the sponsoring local education agency.

A variety of advantages over traditional in-school approaches to vocational education can result from the use of the cooperative model. Advantages to students and employers are summarized in this reprint from the Gloucester County College Cooperative Education Program.

ADVANTAGES TO STUDENTS

1. *Gives reality to learning.* Students find that their studies have greater meaning by coordinating work experience with classroom instruction. In addition, they can learn things on a job which cannot be taught in a classroom.
2. *Increases education motivation.* The integration of work and study may increase student motivation because it engenders a sense of professionalism.
3. *Stimulates personal growth.* Students discover the cooperative education work experience can provide them with opportunities to broaden their outlook and shape their behavior patterns.
4. *Provide orientation to the world of work.* Students have an excellent opportunity to test their interests and abilities in real jobs and gain a new understanding of, and a healthy attitude toward, the real world of work.
5. *Provides Financial Assistance.*

(Cont'd.)

ADVANTAGES TO EMPLOYERS

1. Recruitment efforts and expenses are less if cooperative students are employed after graduation.
2. Career oriented students have proven to be better employees because they have the fundamentals of their chosen occupation and are continuing their education by gaining practical experience.
3. Cooperative Education provides employers with a regular flow of qualified talent, available to them the year round.
4. Employers have the opportunity to train promising young students in the ways of their firms, with an eye toward permanent employment after graduation.
5. Input into the educational process will provide better qualified personnel for the future.

Cooperative approaches to providing vocational education have been gaining prominence. Congress has fostered the development and expansion of cooperative approaches through the Comprehensive Employment and Training Act (CETA) and through the Vocational Education Act (VEA) programs. The federal government and several states are currently offering tax credits to employers that provide training to cooperative students. The tax credits, which reduce the expense of salarying students, are expected to be an important incentive to employers for participating in cooperative programs.

B. Connecticut's Cooperative Work Experience Program for Diversified Occupations (CWE-DO)

At the secondary level, Connecticut's public high schools have approximately 3,000 students enrolled in Cooperative Work Education Programs for Diversified Occupations (CWE-DO).

Eligibility is restricted to students aged 16 and over who are not enrolled in a college preparatory program, and who are not able to obtain training in their chosen field through purely in-school training approaches. CWE-DO students receive on-the-job training from participating employers. The employers also provide salaries. Related classroom instruction is provided at the student's regular high schools.

CWE-DO programs are administered by Connecticut's local education agencies (LEAs). Teacher-coordinators employed by the LEAs are responsible for preparing curricula, teaching CWE-DO classes, identifying and developing training stations, placing students at training stations, monitoring work sites and observing student performance on the job, and assisting employers in the development of individualized training plans. The teacher-coordinators are also responsible for student guidance, grading and other related activities.

The Connecticut State Department of Education serves as a regulatory authority and also provides technical assistance. Through its program approval process, its promulgation of statewide assessment and operation guidelines, and through additional regulatory and technical assistance activities, the Department has sought to maximize the likelihood that vocational training of high quality is provided within the cooperative approach.

C. Problem Statement

Cooperative programs are not intended solely to be arrangements through which students are permitted to earn an income during school hours. The programs are intended to emphasize training. The definition of cooperative education set forth in the Vocational Education Act of 1976 emphasizes the importance of coordination and forward planning between school and employer to insure that a quality training experience is provided. Cooperative education is "...vocational education for persons who, through written cooperative arrangements between the school and employers, receive instruction by alternation of study in school with a job in any occupational field, but these two experiences must be planned and supervised by the school and employers so that each contributes to the student's education and to his or her employability..." (VEA 76, P.L. 94-482, Sect. 1975, (18.))

In practice, the local education agency is primarily responsible for maintaining a coordinated program within which both school-based and out-of-school activities add to the student's education and employability. This responsibility includes the selection, monitoring and development of out-of-school training stations.

A formal mechanism for effecting coordination and emphasizing training is the individual training plan; an agreement that sets forth the specific skills that the student is to learn at the employer's facility, as well as the general and job-related classroom instruction that the school will provide. In addition to the training plan, teacher-coordinators depend heavily on field visits and on their personal relationships with the managers of training stations to effect coordination and to promote quality training. However, for a variety of reasons these approaches do not insure that the training station provides a sufficient emphasis on training, or that the out-of-school training experience is efficient and of sufficient scope to be consistent with the student's vocational goals.

1. The Selection and Utilization of Training Stations

Not surprisingly, much emphasis is placed by administrators of cooperative occupational programs on the selection of training stations. A nationally used guide for administering cooperative programs lists 34 separate criteria for judging the suitability of training stations. These criteria fall within the following catagories: the acceptability of the occupations for which the employer can provide training, the employer's employment policies and practices, the attitudes and capabilities of the employer with respect to providing training, the quality of the full-time personnel who would be responsible for providing training, and working conditions.

In practice, many teacher-coordinators are not in a position to apply these selection criteria, because the number of quality training stations is not nearly sufficient to meet student demand. Thus a tendency exists to accept training stations of poorer quality so that all students who wish to participate may be included in the cooperative program. Problems arise from this practice.

The problems involving out-of-school training stations are numerous, but the major problems typical of many poor training stations are as follows:

- Overemphasis on productivity with a concomitant underemphasis on training; and
- Limitation of the number of tasks that can be learned at training stations. Frequently, these tasks are insufficient in number to meet the student's occupational objectives.

Overemphasis on Productivity

In cooperative occupational programs, a potential conflict can exist between the employer's responsibility to provide training and the employer's need to obtain higher productivity from all employees. In some cases, training can become subordinated to the employer's productivity requirements. In Connecticut's CWE-DO programs as elsewhere throughout the United States, employers pay cooperative students for the time they spend in training at the training station. Even though employers pay students while they are being trained, it is unlikely (i.e., there is no guarantee) that cooperative students will remain with the employer after completing the training program. Therefore, the inexpensive labor (available during the school day) that the cooperative student provides may be viewed by employers as a quid pro quo in return for the training and compensation received by the cooperative student.

At successful training stations, there is no conflict between the requirement to train and pressure to increase productivity. Flexibility in the utilization of full-time employees and a sufficient number of tasks available to be learned can result in students being trained while making productive contributions to the employer's business. However, many training stations do not succeed in effecting a reasonable balance between training and work.

The teacher-coordinator with limited access to quality training stations may believe that the placement of a student at a training station that has insufficient training emphasis is better than no placement at all. Nevertheless, the teacher-coordinator will be concerned if stations do not measure up to the standards of the cooperative program and if students spend excessive amounts of time simply working for employers rather than learning the occupational skills and acquiring the knowledge that the training experience should provide. Currently, training stations that do not provide sufficient training pose a severe control and monitoring burden for teacher-coordinators, and limit the effectiveness of the program.

Restricted Range of Occupational Tasks Available to Be Learned

Some training stations simply cannot provide training for a sufficient number of occupational tasks to justify students spending much time at these stations. For example, a student who wants to be trained as a short-order cook may be placed at a training station that is a fast food establishment. At this training station, the student will have an opportunity to learn only a small number of the occupational tasks ordinarily required for short-order cookery, because only a relatively small number of the tasks required for short-order cookery are carried out at such an establishment. Therefore, if a student who wishes to be trained as a short-order cook is placed at a fast-food establishment, the student should not remain at that training station any longer than it is necessary to master the limited range of tasks that can be taught there. If a student remains too long at such a station, substantial amounts of time may be spent carrying out tasks that have long since been mastered, or carrying out menial tasks that require no training.

Many teacher-coordinators believe that too much time is spent by students at training stations at which only a limited number of tasks can be mastered. Once again, the teacher-coordinator is presented by a dilemma in deciding whether to make use of such training stations. If training stations are scarce, the only alternative to placing a student at such stations may be no placement at all.

2. The Teacher-Coordinator

The problems produced by less-than-ideal training stations are exacerbated by two major problems experienced by most teacher-coordinators. First, there are substantial demands on teacher-coordinators' available time, and second, the teacher-coordinator cannot possibly be an expert in all occupations that are included in a diversified cooperative program.

Expertise in Diversified Occupations

When the teacher-coordinator does not know much about the particular occupation or occupational cluster for which the student is to receive training, the employer is likely to unilaterally determine the course of training. In addition, the teacher-coordinator may have difficulty discriminating between those training stations that are providing quality training and those that are not.

Available Time

A more serious problem may be the overload that many teacher-coordinators experience. Under ideal conditions,there should be adequate time available for teacher-coordinators to work in the field, i.e., at employer training stations, both to monitor and help employers to improve the quality of training.

Does the average teacher-coordinator have time to carry out his or her field responsibilities? A national conference on cooperative occupational education held in 1969 addressed the matter of time required for coordinating on-the-job training with classroom instruction (University of Minnesota, 1969). The conference recommended that each training station should be visited at least once every two weeks, and that one-half hour per student per week should be allocated for visits to the training station. Recent literature has identified the multiple, heterogeneous roles of teacher-coordinators and has demonstrated that they are very busy (Wolf, 1978). The findings from a recently-conducted task analysis of teacher-coordinators in Texas (Mitchell, 1978) suggest that many teacher-coordinators are not allocating close to one-half hour per week for working with students and employers at the job site. Based on the data provided from the Texas teacher-coordinators, it appears that those teacher-coordinators who carry out monitoring, evaluation and other tasks at the training station spend an average of 7.51% of their time engaged in these activities. Assuming a 45-hour week and 25 students per teacher-coordinator, that is equal to approximately eight minutes per week per student.

While the above analysis is imprecise and its applicability to Connecticut uncertain, the Texas data strongly suggest that coordinators are generally not able to spend the amount of time required to effectively monitor and help to improve the amount of time required to effectively monitor and help to improve the quality of training provided at training stations. The situation is exacerbated by the tendency of financially constrained local education agencies to relax standards by increasing student/teacher ratios in cooperative education to a level at which it becomes impossible for the coordinator to monitor training stations.

When teacher-coordinators have insufficient time to visit training stations for the purpose of establishing productive relationships with employers and observing how students are being trained, the end result can be that the training potential of each training station is not realized. The student may not spend a sufficient proportion of his time being trained, and the total time expended at the training station may be too long relative to the time actually required to learn the occupational skills that the training station has agreed or is equipped to teach.

3. The Need for Management Tools

As a group, the teacher-coordinators within Connecticut's CWE-DO program are experienced professionals who, equipped with the proper tools, should be able to make valid assessments of the quality of training provided at particular training stations, and whether students' rates of progress at training stations are consistent with realistic expectations. Realistic expectations for rates of progress must be developed for a given student at a given training station, and such judgments shall undoubtedly remain in the province of the teacher-coordinator. Management tools are needed in order to help the teacher-coordinator to develop these assessments and expectations.

III. Rationale

During the 1979-1980 school year Metis Associates developed two management resources designed to assist CWE-DO teacher-coordinators to address the problems described in Section II. The management resources were:

- Occupational task structures. Frameworks that link occupational tasks to the occupations for which CWD-DO programs provide training; and
- Objective training-time standards. Time-on-task standards for the mastery of occupational tasks to be learned at training stations.

Occupational task structures are intended to provide a systematic means for linking occupations to their component occupational tasks. Training-time standards are intended to provide an objective basis for teacher-coordinators to estimate the amount of time that students should remain at their training stations.

Together, these management tools can provide teacher-coordinators with a basis for determining the content and duration of training. With these management tools, teacher-coordinators:

- Would be less dependent on their personal expertise and knowledge regarding all of the occupations included in their programs;
- Would be less dependent on the judgment of employers; and
- Would be in a better position to insure that training remains the major purpose of the out-of-school work experience.

How could these management tools be used? First, both tools could be used for negotiating training plans with employers. The tools would provide teacher-coordinators with an objective basis for establishing with the employer and the student the occupational tasks to be included in the training plan and the approximate amount of time that will be required for the student to master each of the tasks. Second, the training-time standards could facilitate the monitoring of progress made by students at training stations. By comparing estimated training duration to actual duration, teacher-coordinators could easily detect significant discrepancies, determine if problems existed, and, when necessary, take appropriate action. The students themselves would be able to provide much of the necessary information related to time expended on various tasks if training plans and other reporting forms were organized for this purpose.

Third, the task structure would enable teacher-coordinators to identify and possibly to make more effective use of training stations which can provide training only in a limited number of tasks. By comparing the number and nature of tasks for which a station can provide training with the tasks associated with that occupation in the task structure, the teacher-coordinator would be able to identify the advantages or limitations of the prospective training stations. Based on this comparison, the teacher-coordinator might prefer to arrange for a different placement. Alternatively, if the teacher-coordinator decides to make use of the station, he or she can use the training-time standards to limit the duration of training so that a student would not remain at the station for a greater period of time than is required to master a limited number of tasks.

Historically, many employers have maintained that as long as they were paying the students, they would determine the content and pacing of the training. Even when teacher-coordinators believe that there is an insufficient emphasis on training, they are reluctant to remove students from training stations because they do not have alternative placements.

The recently enacted federal and state tax credits for employers that provide training could help to improve cooperative education. The tax credits could serve to reduce employers' needs to subordinate training to productivity, and employer willingness to meet the needs of cooperative students is likely to grow. To reemphasize training in cooperative programs, however, teacher-coordinators must be in a position to make effective use of the leverage with employers that the tax credit can provide. By providing an objective basis for working with the employer to identify the appropriate content and duration of training, the management tools that Metis Associates has developed should enable teacher-coordinators to influence more effectively the training that employers provide.

IV. Objectives and Project Design

A. Objectives

Metis Associates proposed to develop task structures and training-time standards for five occupations in the food service trades. A general outline of the objectives of the work, together with a listing of the major tasks that were performed to meet each objective, are presented below.

Objective A. The development of a methodology for constructing occupational task structures.

- Task A.1 Develop functional requirements for the task structure
- Task A.2 Develop a standard process for the selection of occupational tasks to be included in the task structure.
- Task A.3 Develop procedures for grouping similar tasks.
- Task A.4 Develop a format for the task structure.

Objective B. The development of a task structure for food service occupations.

- Task B.1 Select five (5) food service job titles to be included in the food service task structure.
- Task B.2 Acquire and select task analyses to be used in constructing the food services task structure.
- Task B.3 Adjust the data in selected food service analyses so that they are more representative of Connecticut employers.
- Task B.4 Develop food service task groupings.
- Task B.5 Develop a food service task structure.

Objective C. The development of a methodology for establishing training-time standards.

- Task C.1 Select a panel of subject area specialists.
- Task C.2 Develop a procedure for selecting tasks from the task structure for which training-time standards are to be established.

Task C.3 Compile mastery criteria.

Task C.4 Prepare materials for testing alternative training-time estimation procedures.

Task C.5 Collect training-time estimates from panelists.

Task C.6 Analyze results, interpret analyses, and determine the most effective approach for establishing training-time standards.

Objective D. Developing training-time standards for food service occupations.

Task D.1 Calculate training-time standards.

Task D.2 Associate training-time standards with the task structure.

Objective E. Develop preliminary procedures for utilizing task structures and training-time standards at the local level.

Task E.1 Select CWE-DO teacher-coordinators.

Task E.2 Conduct workshops

Task E.3 Develop preliminary procedures.

Objective F. The design of a field test.

Task F.1 Develop and document a field test design.

B. Discussion of Objectives

The selection of occupations for which task structures and training-time standards were developed was to be mutually agreed to by the Division of Vocational Education, Connecticut Department of Education, the Project Advisory Committee, and Metis Associates. The selection of occupations was to be based primarily upon the needs of the CWE-DO program as defined by the State Department of Education. A second selection criterion was the availability of relevant task analyses and competency-based curricula from which the task structures and training-time standards were to be developed. (Given the recent proliferation of these types of materials, it was unlikely that the project would have been limited by the availability of sufficient task analyses or competency-based curricula.)

Metis Associates believed that the work would be facilitated by beginning with food service occupations because many of the problems associated with training stations occur in the food service area (particularly at fast food establishments). In addition, beginning with the food service area would enable the state to capitalize most effectively on the work that Metis Associates carried out in its feasibility study.

However, at the discretion of the Connecticut State Department of Education, task structures and training-time standards could have been initially developed for occupations outside of food services. Any one group of related occupations would serve to develop the general methodology for formulating task structures and establishing training-time standards. Once the methodology has been established, documented, and field tested, it can be applied by the State Department of Education to the development of task structures and training-time standards for other occupations. The initial set of occupations were finally selected from the food service trades.

Objective E refers to the development of procedures for making use of the proposed management resources at the local level. These procedures are concerned with the ways in which teacher-coordinators make use of the proposed management resources to influence the course of training provided at training stations. For example, at the local level, the teacher-coordinator must be able to convert the training-time standards to an estimate of elapsed time that is appropriate to the strengths and weaknesses of individual students and particular training stations, and that is consistent with scheduling requirements.

The procedures developed initially for local utilization must necessarily be preliminary. A field test of the management tools is necessary for final development of these procedures. Therefore, Metis Associates also provides a design for field-testing the management tools (Objective F). The actual execution of the field test falls beyond the scope of the current work.

Objective F calls for the design of a field test in which the effectiveness of the proposed management resources can be evaluated. Metis Associates recommends that a field test be executed prior to carrying out any further development of task structures and training-time standards for additional occupations because the results of the field test could reveal ways to strengthen the methodology for developing the task structures and training-time standards. The methodology should be revised based on experience before task structures and training-time standards are developed for additional occupations.

C. Design Concepts and Methods

Design concepts and methods for developing task structures and training-time standards are described in this section.

1. Developing task structures

The major functional specification of occupational task structures is that they enable teacher-coordinators to more effectively develop training plans with participating employers. Task structures having the following characteristics would best serve this purpose.

- Task structures should be sufficiently comprehensive to include all the major tasks in a given occupational title for which the cooperative program provides training.
- The commonality of tasks over occupations should be indicated; i.e., task structures should be organized to distinguish between tasks that are required for several jobs and those that are required for a single job.
- Task structures should indicate the relative importance of different tasks to successful job performance.
- The task structure should indicate those tasks needed for job entry and those needed for advancement.
- The task structure should indicate the extent to which different occupational tasks share skills in common.

Since there were no linkages of occupational tasks and occupations available that would completely fulfill the specifications set forth above, Metis Associates tested the feasibility that such task structures could be developed from existing occupational task analyses.

Occupational task analysis is an empirical process of linking tasks and occupations. The procedures for conducting such analyses vary, but they generally include the following steps:

- Lists of occupational tasks are compiled for a given job title or group of job titles;
- Lists of employers that employ individuals with the given job titles are also compiled;
- A systematic procedure is used to select a stratified sample of employers to be surveyed;
- Survey booklets are completed by the employees of the sampled firms. Employees with given job titles are asked to indicate the amount of time spent on each of the occupational tasks. Additional information, such as number of years on the job, is also obtained.
- In some task analyses, survey booklets are also completed by supervisors. They may provide information on allocations of personnel time to various tasks, as well as an assessment of the extent to which task mastery should be emphasized in training.

Metis Associates conducted its feasibility study during the 1977-1978 school year. As part of that study the following task analyses and related curricular materials were reviewed.

- Vocational-Technical Education Consortium of States (V-TECS) task analyses;
- Kentucky State Education Department and the University of Kentucky competency-based instructional modules which are linked to the performance objectives in the V-TECS task analyses;
- Iowa Task Analyses of Home Economics Related Occupations;
- Curricular materials linked to the Iowa Task Analyses that are used by the Mid-America Vocational Curriculum Consortium (MAVCC);

- The Interstate Distributive Education Curriculum Consortium (IDECC) task analyses;
- Curricular materials (Learning Activity Packages: LAPs) linked to the IDECC task analyses;
- Task analyses for the food services trades that have been developed by the U.S. Air Force, the Training and Doctrine Command of the U.S. Army; and
- Other task inventories that are listed in the Directory of Task Inventories of the National Center for Research in Vocational Education.

From this review of task analyses and related curricular materials, Metis Associates concluded that:

> ... data from existing task analyses are usable in developing task structures, but the analyses fall short of providing all of the needed information. Task analyses provide lists of generic tasks associated with given occupations. They also provide important information concerning the tasks performed by entry level and more advanced workers, the tasks that are common to several occupations, and the tasks that are considered important. On the other hand, task analyses do not in themselves provide much information concerning the full range of competencies implied by a given task, nor do they provide direct information on what tasks should be emphasized in training. In short, task analyses do provide a variety of useful information concerning occupational tasks that will need to be reorganized and supplemented to develop a task structure. Despite the shortcomings of currently available materials, it appears that a relatively standard process may be applied to developing a task structure for virtually any cluster or category of occupations for which analyses of reasonable quality exist. These procedures may be best specified and documented through the development of a specific task structure, such as a task structure for the food service trades.[1]

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[1] The Development of Training-Time Standards and Related Management Tools for Connecticut's Cooperative Work Education Programs in Diversified Occupations (CWE-DO) : A Feasibility Study. A Metis Associates final report submitted to the Connecticut State Department of Education, Bureau of Vocational Services and the Norwalk Board of Education, June, 1978, P/310.

The following steps would be necessary to design task structures from existing task analyses:

- Select and validate task analyses from which task lists and related information are to be obtained.
- Develop a standard process for the selection of tasks to be included in the task structure.
- Adjust tasks so that they are representative of Connecticut employers.
- Develop approaches to indicate the relative importance and training emphasis for each task.
- Develop a format for the task structure.

2. Developing training-time standards

Based on its feasibility study, Metis Associates believed that valid, reliable training-time standards could be developed for occupational tasks. For training-time standards to be valid, they must be based not on the elapsed or clock time required for training, but rather on the actual time spent mastering tasks. The distinction between elapsed time and "time on task" is critical to the development of valid and reliable training-time standards. Because of variations in training schedules, equipment availability, attendance, and other factors, it is virtually impossible to develop estimates of elapsed time for one training station (or school, for that matter) that will be applicable to other training stations. However, the actual time spent on mastering the task may be applicable to all stations. Therefore, training-time standards should be based upon time actually required to master the task. Such estimates of time required for mastery can be converted at the local level to estimates of elapsed time for individual students at individual training stations. Ultimately, ratios of mastery time to elapsed time may be established that are acceptable to the CWE-DO program.

For training-time standards to be meaningful, there must be an unambiguous, operational definition of what is meant by the learning or mastery of an occupational task. Varying definitions of mastery would have a major effect on training time, and much experience suggests that teachers differ markedly in the criteria they use for defining mastery. Thus for training-time standards to be established, there must be explicit criteria defining the mastery of tasks.

The procedures for developing a methodology that produces training-time standards are technically complicated and require assistance from a panel of subject-area (food services) specialists. For each task in the task structure the panelists were to first agree on mastery criteria. The tasks and their corresponding mastery criteria were then to be used by the specialists to enable them to make three estimates for each task: 1) individual, absolute judgments of the hours of on-task training required for mastery; 2) individual, relative magnitude estimates of the hours of on-task training required for mastery; and 3) consensual estimates, following a group discussion, of the time required for mastery. Each panelist was to provide individual judgments first. After the individual estimates had been gathered, group discussion and consensus-based estimates were to be obtained from the panel. The three estimation procedures are described in the following paragraphs.

(1) Individual, absolute estimates of the hours on task required for mastery

In this method, the panelists were to develop independent estimates. Carefully-worded instructions would request that the panelists use their professional experience to estimate the hours of training time on task that an average student would require to master the occupational task, given the procedure and equipment indicated, and at a level of proficiency that is consistent with the indicated mastery criteria. Great care would be taken in developing the estimation instructions to make certain that the panelists recognize the distinction between elapsed time and time on task.

(2) Relative magnitude estimation procedures

Relative magnitude estimation is a scaling procedure in which estimates are provided in relation to a standard or modulus. Rather than providing estimates in terms of absolute hours, the panelists were to be asked to assign numbers to each occupational task that reflect the ratios between tasks (in the training time required for mastery). For example, if Task A is estimated as taking ten (10) hours for mastery, and Task B, in the opinion of a panelist, will take twice as long to master as Task A, then Task B is estimated to take twenty (20) hours. To simplify the rater's task, all ratings of training hours were to be made relative to a standard task. This type of magnitude estimation approach to obtaining estimates has the advantage of permitting the panelists to make relative judgments in which the comparative differences or ratios in training times over tasks are made salient to the estimator.

(3) Consensual estimates

After the panelists provide their two sets of individual estimates, they would then discuss with each other, the individual, absolute estimates that they provided. The panelists would state their estimates to each other, and then state their justifications for the number of training hours they estimated. A discussion would follow which would lead, in most instances, to a consensually-shared estimate. The order in which the panelists state their estimates would be counterbalanced over tasks. In some instances, the group discussion would lead some panelists to conclude that they misinterpreted the task when making their initial, individual estimates. Such misinterpretations would be noted by the Metis staff, so that improvements may be made in the language of the task descriptions. But in order to fairly appraise each of the prospective estimation approaches, panelists would not be permitted to adjust their original, training-time estimates.

The results of each of the three approaches to estimating the hours of training were to be evaluated and compared. Interrater reliability coefficients were to be developed for each of the individual methods. The ranges of the panelists' judgments for each task and for each of the methods were also to be compared. Intercorrelations of the hours of training estimated from the individual methods, and the hours estimated from the consensual method, were to be calculated to determine the extent to which the methods produce similar results. From these data the best procedure or combination of procedures for estimating training-time standards was to be formulated.

V. Results

In order to develop a communication channel through which project personnel could receive community and professional advice and support for project activities and outcomes, Metis Associates, with the assistance of the Connecticut State Department of Education, established a Project Advisory Committee (PAC) at the start of the project. The PAC was comprised of five members, with the following representation:

- one person representing sex equity concerns for the project;
- one person representing community interests;
- one person representing the Connecticut State Department of Education;
- one person representing an ethnic minority group; and
- one person representing the vocational education research community.

The composition of the PAC is in agreement with the specifications required by the State Department of Education (a Project Advisory Committee Roster is attached to this report).

During the course of the project the PAC met periodically to review project goals, objectives and activities; to recommend ideas and strategies to meet desired outcomes; and to assist in evaluating the project. A number of useful suggestions were made by members during and, informally , between PAC meetings that were incorporated into the project activities and results (copies of PAC agendas are attached to this report).

The remainder of this section describes the results of Metis Associates' work on the development of task structures and training-time standards during the 1979-1980 school year.

A. Procedures for Developing Task Structures

The development of task structures was essentially a six-step process that included:

1. Needs Analysis;
2. Review of Existing Task Analyses and Competency-Based Materials;
3. Selection of Occupations;
4. Format Development;
5. Task Inventory Construction; and
6. Content Validation.

Each of these steps are described below.

1. Needs Analysis

Metis Associates began the project with an analysis of Connecticut's CWE-DO food service participant and training station data. This activity was performed in order to help the Project Advisory Committee select a sample of food service occupational titles that appear most relevant to the training needs of the CWE-DO program participants in Connecticut.

Table 1 shows the rank-order distribution of CWE-DO students in food service occupations having more than ten participants. The sample of 436 students depicted in Table 1 constitutes approximately 94 percent of the 465 students placed in food service training stations during the 1978-1979 school year. From the table it can be seen that the Connecticut CWE-DO food service program has placements ranging in complexity from dishwasher to chef. Inspection of the table reveals that the greatest number of food service placements were for training as counterpersons (N = 71, 15.3%), while fewer than three percent of the placements were for training as pizza bakers (N = 12, 2.6%).

Table 1

CWE-DO Food Service Training Placements
1978 - 1979 (N = 436 Students)

Occupations (Dictionary of Occupational Titles Code)	Number of Students	Percent of Students	Rank Order
Counterperson (311.878-026)	71	15.3	1
Waiter/Waitress (311.878-058)	58	12.5	2
Food Service Worker (311.887)	42	9.0	3
Busperson (311.887-010)	39	8.4	4
Cook Assistant (317.887-010)	38	8.2	5
Kitchen Helper (318.887)	37	8.0	6
Short-Order Cook (314.381-010)	35	7.5	7
Cook/Chef (315.381-010)	31	6.7	8
Food Preparation Helper (315.381-010)	31	6.7	8
Dishwasher (318.887)	29	6.2	10
Baker's Helper (313.884-010)	13	2.8	11
Pizza Baker (313.381-010)	12	2.6	12

Table 2 (below) shows the distribution of the training stations into which the 436 sampled students were placed. It can be seen from Table 2 that more than half (52.8 percent) of the students were working in restaurants, and almost one third (31.4 percent) were working in fast food establishments.

Table 2

CWE-DO Food Service Training Stations

1978 - 1979 (N = 436 Students)

Type of Training Station	Number of Students	Percent of Students
Restaurants (including hotels & inns)	230	52.8
Fast Food Establishments	137	31.4
Institutions (hospitals, nursing homes, schools, colleges, homes for the aged)	31	7.1
Pizza Parlors	17	3.9
Caterers	9	2.1
Bakeries	8	1.8
Miscellaneous	4	.9

Table 3, a cross-tabulation of the data contained in Tables 1 and 2, shows how the occupational titles were distributed among the various types of training stations. For example, it can be seen from Table 3 that most of the cook/chef trainees were employed in restaurants (24 out of 31) while most of the counterperson trainees were employed in fast food establishments (41 out of 71).

The above needs analysis data were included in the final criteria for selecting the five food service occupations for which task structures and training-time standards were developed.

Table 3

CWE-DO Food Service

Occupation X Type of Training Station

1978 - 1979 (N = 436 Students)

Type of Station Occupation	Restaurants	Fast Food	Institutions	Pizza Parlors	Caterers	Bakeries	Miscellaneous	Total
Counterperson	24	41	2		3		1	71
Waiter/Waitress	27	26		4			1	58
Food Service Worker	16	16	8		2			42
Busperson	27	10	2					39
Cook Assistant	27	7	1		2		1	38
Kitchen Helper	22	9	6					37
Short-Order Cook	19	15					1	35
Cook/Chef	24	4	3					31
Food Preparation Helper	21	6		2	2			31
Dishwasher	16	3	9	1				29
Baker's Helper	5					8		13
Pizza Baker	2			10				12
Total	230	137	31	17	9	8	4	436

2. Review of Existing Task Analyses and Competency-Based Materials

As indicated earlier, it is feasible to develop task structures for virtually any cluster or category of occupations from task analyses and competency-based materials that already exist. The extensive review of existing materials performed by Metis Associates during the feasibility study, coupled with a more recent review undertaken during the 1979 - 1980 school year, revealed five promising task analyses, of reasonable quality, that cross-walk with many of the occupations for which the Connecticut CWE-DO program provides training. These are task analyses from:

- V-TECS (Vocational-Technical Education Consortium of States);
- Iowa (Iowa Task Analyses of Home Economics Related Occupations);
- IDECC (Interstate Distributive Education Curriculum Consortium);
- Air Force (United States Air Force Task Analyses); and
- DECA (Distributive Education Consortium of America).

With the exception of the Air Force materials, each of the above included task analyses for more than one of the occupations represented in the Connecticut CWE-DO program. The distribution of these task analyses among Connecticut's food service occupations is shown in Table 4. For example, it can be seen in Table 4 that V-TECS contains task analyses for food service worker, cook assistant, short-order cook and cook/chef, while the Air Force materials contain task analyses only for cook/chef.

The task structures for the five occupations that were ultimately selected for this developmental project were constructed from the task analyses included in Table 4.

Table 4

CWE-DO Food Service

Occupation X Available Task Analyses

Occupation \ Available Task Analyses	V-TECS	IOWA	IDECC	AIR FORCE	DECA
Counterperson		X			X
Waiter/Waitress		X	X		X
Food Service Worker	X	X			
Busperson			X		X
Cook Assistant	X	X			
Kitchen Helper					
Short-Order Cook	X	X			
Cook/Chef	X	X		X	
Food Preparation Helper					
Dishwasher					
Baker's Helper					
Pizza Baker					

3. Selection of Occupations

The final decision about which five food service occupations to include in this work rested with the members of the Project Advisory Committee (PAC). The criteria applied by the PAC included:

- the representativeness of the occupations among the CWE-DO student population (Table 1);
- the variety of training stations associated with the CWE-DO placements (Table 3);
- the availability of occupational task analyses and competency-based materials (Table 4); and
- the apparent complexity (i.e., range of tasks to be learned) of the various occupations.

At the January 29, 1980 meeting of the PAC the members selected the following five occupations for the development of task structures and training-time standards:

- Cook/Chef;
- Waiter/Waitress;
- Kitchen Helper[2];
- Short-Order Cook; and
- Counterperson.

Taken together, these five occupations account for 274 (63 percent) of the 436 students sampled in the needs analysis (see Table 1). Further, with the exception of bakeries, training for these five occupations takes place in all of the various types of training stations that comprise the CWE-DO food service program (see Table 3). In addition, there are at least two high quality task analyses available for each of these occupations, and all five of the task analyses depicted in Table 4 can be used for constructing one or more of the occupational task structures. Finally, the five occupations appear to cover the full range of tasks involved in both food production and service.

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[2] Food Service Worker and Kitchen Helper, both associated with D.O.T. #311.887, constitute the Kitchen Helper title used here.

4. Format Development

The task structure format was derived, in part, from the formats of the five task analyses itemized in Table 4. As indicated earlier, task analysis provides a list of the generic tasks associated with a given occupation. While each of the five task analyses that were used in the current work had its own organizational structure, it was possible for Metis Associates to construct one general outline that could be used for inventorying the occupational skills contained in all of them. The general outline that was developed is included on the next page. It is easy to see how a set of occupational skills for any occupation can be represented in such an outline. On the page following the general outline, categories of tasks for one of the food service trades occupations -- cook/chef, are similarly organized. Corresponding outlines for the project's four remaining occupations were also developed by Metis Associates. The development of such outlines was intended to insure that the task structures that were constructed from them would be sufficiently comprehensive to include all of the major tasks for which the cooperative program provides training.

In addition to providing a comprehensive list of tasks for each occupation, the task structures were also to indicate the relative importance of each task and whether a given task was needed for job entry or was an advanced level skill.

Occupational Skills: General

A. Skills Used Prior to Job Execution (Planning & Organization)

1. Prepare overall workplace.
2. Prepare work station.
3. Specify work to be done.
4. Specify and select equipment.
5. Learn to use necessary equipment.
6. Calculate supplies and materials needed for production.
7. Schedule work to be done.
8. Coordinate and assign tasks.
9. Procure supplies and materials.
10. Receive, store and inventory supplies and materials.
11. Assemble supplies and materials at work stations.
12. Other tasks.
13. Monitor and supervise.

B. Skills Used in Job Execution (Production)

1. Carry out job.
2. Maintain workplace.
3. Other tasks.
4. Obey safety rules during production.
5. Follow sanitation procedures during production.
6. Monitor and supervise.

C. Skills Used Following Job Execution (Follow Up)

1. Deliver job products.
2. Store unused materials.
3. Maintain workplace and tools.
4. Monitor and supervise.
5. Evaluate.

Food Services Trades: Cook/Chef

A. Skills Used Prior to Job Execution (Planning & Organization)

1. Prepare overall kitchen for food preparation.
2. Prepare individual stations for food preparation.
3. Plan menus.
4. Specify and select kitchen equipment.
5. Learn to use necessary kitchen equipment.
6. Calculate food supplies needed for production.
7. Schedule food preparation tasks.
8. Assign food preparation tasks.
9. Procure foodstuffs.
10. Receive, store and inventory foodstuffs.
11. Assemble supplies and foodstuffs.
12. Prepare foodstuffs for cooking.
13. Monitor and supervise.

B. Skills Used in Job Execution (Production)

1. Cook designated menu items.
2. Clean up on an intermediate/continual basis.
3. Prepare food for serving.
4. Obey safety rules when using equipment and tools.
5. Follow appropriate sanitation practices in menu item preparation.
6. Monitor and supervise.

C. Skills Used Following Job Execution (Follow Up)

1. Transfer prepared food to serving location.
2. Store unused foodstuffs.
3. Clean and/or store equipment and tools in accord with safety rules and sanitation procedures.
4. Monitor and supervise.
5. Evaluate.

Various definitions of task importance have been used in the training literature in determining the tasks to be emphasized in training programs. A frequently-used measure of task importance is the proportion of time that a worker is apt to expend carrying out the task. The greater the amount of time expended, the more important the task. However, definitions based on amount of time expended tend to overlook tasks that are performed infrequently but should nevertheless receive some emphasis in training. For example, extinguishing a kitchen grease fire is a task not carried out very frequently, over many hours, or by a large proportion of food service workers. However, it is important that all kitchen workers should know how to carry out this task. An approach to dealing with this issue, one being developed by the U.S. Air Force, entails asking experts in the field to indicate the importance they attach to proficiency in given occupational tasks both for job entry and advancement. This was the approach chosen for the current work because it addresses more directly the question of what tasks should receive emphasis in a training program. The following seven-point scale was used by food service training experts to rate the relative importance of each task in the occupational task structures:

1 = under unusual circumstances, may be a minor part of the job
2 = a minor part of the job
3 = a normal part of the job
4 = a substantial part of the job
5 = a very substantial part of the job
6 = a major part of the job
7 = a most significant part of the job

In preparing training plans, teacher-coordinators need to be able to discriminate between the tasks associated with entry-level workers, and those associated with more advanced workers. Connecticut's CWE-DO programs are generally oriented toward meeting entry-level requirements. Therefore, a given task may be considered important, but still might be deleted from a CWE-DO training plan if that task is not carried out by entry-level workers. The following codes were used by food service training experts to designate task levels within the task structure:

E = entry-level skill

A = advanced-level skill

E/A = a skill that can be considered both an entry-level and an advanced-level skill, depending on the level of expertise required at a particular training station (e.g. evaluating a wine by tasting it can be viewed as an entry-level skill when one is testing whether or not the wine is spoiled, and as an advanced-level skill when one is testing the quality and vintage of the wine).

Another functional specification of the task structure is that it be organized in such a way as to distinguish between tasks that are required for several jobs and those that are required for a single job. Therefore, for each task in a given task structure, there will be a notation indicating whether or not that task is also applicable to any of the other four occupations in the cluster of occupations under study. A number of advantages are obtained by providing information on the relevance of tasks to a variety of occupations:

- This information may help the teacher-coordinator evaluate the training potential of a given training station with respect to a variety of occupations;
- This information facilitates the relating of students' previous training experiences to their current or anticipated training program;
- This information facilitates the relating of students' training to a wider array of jobs than just those that are specifically identified in the individual training plan; and

- This information may help to assess the specificity of training plans (i.e., to determine whether the training plan prepares a student for a single job or for a greater number of jobs).

The final functional specification of the task structure is that it contain training-time standards for each occupational task. The training-time standard is an estimate of the amount of time on task (expressed in hours) that would be required for secondary school students with average intelligence, motor capabilities, and motivation, to master a given occupational task. The development of these estimates is discussed in a later section of this report.

The following format appears to meet all of the functional requirements for occupational task structures discussed above. The format was developed by Metis Associates and reviewed and approved by the Project Advisory Committee on January 29, 1980.

Occupation:______________

	(1)	(2)	(3)	(4)	Related Occupations			
					(5)	(6)	(7)	(8)
	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Occ. #1	Occ. #2	Occ. #3	Occ. #4
Tasks								
•								
•								
•								
•								
•								

For a given occupation, the inventory of occupational tasks would appear on the left half of the above form; task specifications pertaining to relative importance (coded 1-7), skill level (coded E, A or E/A), and training time (expressed in hours) would appear in columns (2) through (4) respectively; and an X would appear in columns (5) through (8) whenever a given task was also required for training in one or more of the other related occupations. A checklist is also included in the form (column (1)) so that teacher-coordinators can indicate which skills a particular training station is equipped to teach.

5. Task Inventory Construction

After developing outlines for the project's five occupations, Metis Associates constructed comprehensive task inventories for each that contained:

- all of the generic tasks included in the relevant task analyses;
- available data related to task importance and task level; and
- available operational definitions of what is meant by task mastery.

These task inventories were then reviewed by food service experts for content validation.

6. Content Validation

The content validation phase of task structure development required input from local consultants with particular expertise in food service occupations and training. Two such individuals were located and agreed to participate in the work.

Mr. Frank Gronda
Food Trades Department Head
E.C. Goodwin Regional Vocational
Technical School
New Britain, Connecticut; and

Mr. Mike Hiza
Hotel and Restuarant Management Professor
Manchester Community College
Manchester, Connecticut

Both of these consultants have had extensive experience as food service tradesmen and as instructors working with the kinds of students and training stations that constitute Connecticut's food service CWE-DO programs. Because of this experience the consultants were able to refine and revise the task inventories that were developed by Metis Associates.

At their first meeting (May 3, 1980) the consultants discovered that they needed to define more precisely each of the five occupations under investigation. The following definitions were agreed to and used by the consultants throughout all subsequent phases of the work:

- Cook - the person responsible for preparing the food in a full service, family style restaurant;
- Waiter/Waitress - the person responsible for serving the food in a full service, family style restaurant;
- Kitchen Helper - the person who assists the cook in a full service, family style restaurant;
- Short-Order Cook - the person who functions as the cook in a small restaurant (e.g., a diner), having a fairly extensive menu, but with no major preparation items; and
- Counterperson - the person who works the counter in a diner or sandwich shop (not a full service restaurant), functioning in both food production and service capacities.

Keeping the above definitions in mind, the food service consultants were led by Metis Associates through a systematic review of the task inventories in order to add missing task statements, delete obviously irrelevant ones, break down task statements that were too broad, improve the wordings of vague or lengthy task statements, and verify the following: the commonalities and differences of tasks within and between occupations; the relative importance of tasks within groups of tasks; and whether tasks were entry level or advanced. After two full-day meetings the food service experts agreed to the set of tasks and task characteristics that are included in the five task structures attached to this report.

B. Procedures for Developing Training-Time Standards

The development of training-time standards required the assistance of the same subject-area specialists who were involved in the development of the other elements of the task structure. The specialists were led by Metis Associates through a three-step process that included:

1. Selecting the most appropriate method for deriving individual estimates;
2. Developing individual estimates; and
3. Developing training-time standards through consensus.

Each of these steps are briefly described in the following paragraphs.

1. Selecting the most appropriate method for deriving individual estimates

It was originally anticipated that the panel of food service experts would make two types of individual estimates (i.e., absolute and relative magnitude) for each task in the task structure before a "best" procedure would be selected. Given the large number of individual tasks (e.g., the task structure for cook contains 193 separate occupational tasks), and limitations on time and resources, this procedure was not feasible, so a sampling procedure was substituted.

Metis Associates prepared two sets of instructions for the panelists to follow when making their individual estimates -- instructions for absolute estimates and instructions for relative magnitude estimates. These instructions are presented on the next four pages, together with the sample of tasks (N= 66) that were selected for this procedure. The task sample consisted of two groups of tasks taken from the task structure for cooks.

- Group 1 - tasks related to learning to identify and understand the use and care of 32 pieces of kitchen equipment; and
- Group 2 - tasks related to learning to cook 34 designated menu items.

Instructions for Absolute Estimates

You have been describing occupational tasks or sub-tasks performed by cooks in full service family restaurants. Your job is to provide an estimate, based on your professional experience, of the amount of time that would be required for secondary students with average intelligence motor capabilities, and motivation, to master each of the tasks or sub-tasks. The following paragraphs provide some guidelines which you are asked to follow.

Estimate the number of hours on-task that is required. Do not estimate elapsed time.

Elapsed time is the amount of clock time or calendar time that goes by before task mastery is achieved. Elapsed time is dependent upon absentee rates, availability of equipment and instructions, and other factors which are impossible for you to estimate.

You are asked to provide estimates of the actual number of hours that an average student must spend in training on the task in order to master the task or sub-task. Task mastery is defined by the mastery criteria that you specified in your discussions.

Requisite Training Experiences

You should assume that all necessary requisite training experiences (on the job as well as in the related classroom) that are required have been given. Do not include such training in your estimates; confine your estimates to the task or sub-task as described.

Instructions for Magnitude Estimates

In previous sessions you described occupational tasks performed by cooks in full service family restaurants. For each task you provided an estimate, based on your professional experience, of the amount of time (in hours)that would be required for secondary students with average intelligence, motor capabilities, and motivation, to achieve mastery. Your job now is to provide relative magnitude estimates for some of these same occupational tasks.

On the following pages, occupational tasks are listed. The first group of tasks (Group 1) are related to identifying and understanding the use and care of major and minor kitchen equipment. The second group of tasks (Group 2) are related to cooking designated menu items. For each group of tasks, one task has been designated the "standard," against which all other tasks in the group are to be compared. These "standards" will each be called 100. Your job is to estimate, relative to the "standard," the amount of time-on-task that an average student will require to master each of the other tasks in each group.

For example, if you believe that a particular task will require two times as much time to master than the "standard," then that task should be estimated as 200. If the task requires half as much time to master than the "standard," then the task should be estimated as 50.

Remember that your job is to estimate actual time-on-task. Do not estimate elapsed time. Remember also to assume that all necessary requisite training experiences that are required have been provided. Do not include requisite training in your estimates; confine your estimates to the task as described.

The Group 1 standard is: Identify and understand the use and care of the deep fat fryer.

The Group 2 standard is: cook pasta (rices, macaroni, spaghetti, noodles).

Group 1: Identify and understand the use and care of all major and minor kitchen equipment.

Standard: deep fat fryer **Estimate:** 100

Task List for Group 1

(1)	brazier pans	
(2)	broiler	
(3)	can openers	
(4)	coffee urn and/or coffeemaker	
(5)	dishwashing machine	
(6)	food mixer (e.g., Hobart and attachments)	
(7)	French knives	
(8)	grill (gas, hot spot, cold spot)	
(9)	heated carts	
(10)	high speed cutter or chopper (buffalo chopper, food cutting machine)	
(11)	hot/cold carts	
(12)	hot plates or coffee warmers	
(13)	kettles (steam jacketed, tilting steam jacketed, trunnion tilting)	
(14)	meat and vegetable food grinder apparatus	
(15)	meat saw	
(16)	miscellaneous small tools (peelers, cleavers, etc.)	
(17)	ovens (conventional, micro-wave, convection, reconstitutional)	
(18)	proof boxes	
(19)	qualheim (vegetable preparation machine)	
(20)	refrigerators	
(21)	roll warmer	
(22)	sauteé pans	
(23)	scales a) beam	
	b) fan	
	c) spring	
(24)	slicer (automatic, gravity feed)	
(25)	steamer-high pressure	
(26)	steamer-low pressure	
(27)	steamer-zero p.s.i. (pounds per square inch)	
(28)	tilting skillet	
(29)	toasters and toaster ovens	
(30)	VCM (vertical cutter/mixer)	

Group 2: Cook designated menu items.

Standard: pasta (rices, macaroni, spaghetti, noodles)

Estimate: 100

Task List for Group 2

- (1) baked goods
  - a) yeast rolls
  - b) yeast breads
  - c) quick breads
  - d) pies
  - e) icings
- (2) convenience foods (including dehydrated or concentrated foods)
- (3) eggs (pan and griddle)
  - a) fried
  - b) omelet
  - c) poached
  - d) scrambled
- (4) French toast
- (5) hot beverages (cocoa, coffee, tea)
- (6) hot cereals
- (7) meats
  - a) bake/roast
  - b) barbecue (marinade)
  - c) broil
  - d) combination cooking
  - e) fry and deep fry
- (8) pancakes and waffles
- (9) sauces
  - a) basic brown
  - b) cream
  - c) tomato
  - d) velouté
  - e) hollandaise
- (10) soups
  - a) thick
  - b) minestrone
  - c) gazpacho
- (11) stocks
  - a) fish
  - b) chicken
  - c) vegetable
- (12) vegetables (green, red, yellow, white)
  - a) au gratin
  - b) broil
  - c) parboil
  - d) steam

The panelists discussed mastery criteria for each task, followed the estimation instructions, and developed two sets of independent training-time estimates. The results of the two approaches were then compared. For each approach, interrater reliability coefficients were developed for the two groups of tasks and for the total sample of tasks. Since there were two judges, the interrater reliability coefficients are simply product-moment correlation coefficients between the judges' ratings within each method. These correlation coefficients are shown in Table 5.

Table 5

Correlation Coefficients for Two Methods
for Developing Training-Time Standards
(N = 66 Occupational Tasks)

Group 1 Tasks (N = 32)		Group 2 Tasks (N = 34)		All Tasks (N = 66)	
Method 1*	Method 2*	Method 1	Method 2	Method 1	Method 2
.6316	.5435	.8054	.4261	.7500	.3260

* Method 1 refers to absolute estimation; Method 2 refers to relative magnitude estimation.

It can be seen from Table 5 that the correlation coefficients derived when panelists used Method 1 -- absolute estimation, were consistently higher than when Method 2 -- relative magnitude estimation, was used. In fact, over all 66 tasks, the interrater reliability coefficient for the absolute estimation procedure (.7500) was more than twice as large as the coefficient for the relative magnitude estimation procedure (.3260).

On the basis of these data, the absolute estimation procedure was selected as the more appropriate method for deriving individual training-time estimates for all remaining tasks.

2. Developing individual estimates

During workshop sessions the panelists reviewed each task in the task structures, discussed mastery criteria, and independently recorded absolute estimates of training time for each remaining task. This activity was carried out in accordance with the procedures contained in the instructions presented earlier in this report.

The results for the two panelists were compared, and an interrater reliability coefficient was calculated for the 193 tasks that comprise the entire task structure for cooks. The correlation coefficient was found to be .8614 -- demonstrating a significant degree of consistency between the judges. It should also be noted that the average training-time estimates for the two judges were extremely close; 2.17 hours per task for one judge, and 2.21 hours per task for the other judge (a mean difference of only .04 hours). These data strongly support the use of absolute estimation procedures for deriving consistent and reliable training-time standards for occupational tasks.

3. Developing training-time standards through consensus.

After the panelists recorded their individual, absolute estimations, they were permitted to share them with each other. A discussion any discrepancies followed, which led to a consensually-shared absolute estimate for each task. The order in which panelists stated their estimates was counterbalanced over tasks. In most cases the consensually-shared estimate was the mid-point between the two individual estimates. In some instances, the discussion led one panelist or the other to conclude that he had misinterpreted a particular task when making initial, individual estimates. But in order to fairly appraise the estimation procedure, only original training-time estimates were used for calculating the reliability coefficients reported above.

After two more full-day meetings the panelists agreed to the set of consensually-shared training-time standards (expressed in hours) that are included in the five task structures attached to this report. Agendas for all four meetings of the food services experts are also appended.

C. Procedures for Using and Field Testing the Management Tools

In June, 1980 Metis Associates personnel conducted workshops with three CWE-DO coordinators during which problems and issues related to the use of the task structures and training-time standards were identified and addressed. The following were among the issues that were taken up in the workshops.

- Using task structures and training-time standards in the formulation of training plans;
- Using task structures and training-time standards to monitor and control the content and pacing of training at training stations;
- Applying the task structures and training-time standards to the needs of individual students and training stations; and
- Obtaining information related to how actual training times compare with the training-time standards.

The workshops provided a useful forum for assessing the views of teacher-coordinators, and for obtaining from them a set of tentative procedures for utilizing the management tools. These procedures are outlined below.

- Meet with food service training station personnel to determine which tasks they are equipped to teach -- the checklist column on the task structure can be used to record this information.

- Review tasks checked on the task structures for their applicability to given students' training needs. Under some circumstances it might be possible to place a student who wants to be trained as a waiter at a training station for cooks (if that is the only available station), provided the training he receives there is focused on the subset of waiter/waitress skills that cross-walk with skills needed by cooks (e.g., learning to use and care for a coffee urn).
- Construct a list of appropriate tasks to be learned by each student.
- Review tasks within the list of appropriate tasks for their relative importance and level.
- Prepare a tentative training plan from these data, noting the training-time standards for each task.
- Review the tentative plan against the needs and characteristics of individual students and training stations in order to develop a reasonable estimate of the elapsed time predicted for various tasks or groups of tasks within the training plan.
- Modify the tentative plan based on feedback from the involved student and employer.
- Institute the plan.
- Use the plan to help monitor both the content and pacing of training.

During the workshops the teacher-coordinators endorsed the notion that procedures for using the task structures and training-time standards be field tested before large-scale implementation is carried out. In fact, each of the participating teacher-coordinators expressed strong interest in being involved in such a field test. Metis Associates believes that a properly executed field test would reveal ways to strengthen the methodology for developing as well as for utilizing the management tools. Once the necessary methodological revisions are made, then teacher-coordinators should receive appropriate inservice training in the use of these tools.

Metis Associates has designed a field test in order to identify problems in using the management tools, and to assess the extent to which the management tools can be effective in helping teacher-coordinators to establish and maintain a greater training emphasis at their training stations. The field test design (attached to this report) specifies: objectives; activities; the number of local CWE-DO programs, students and training stations that will participate; and measures and methods for assessing the utility of the management tools.

APPENDICES

METIS ASSOCIATES INC.

Project Advisory Committee

Roster

Project: The Development of Occupational Task Structures and Training-Time Standards for Cooperative Vocational Education.

1. Francis A. Ferrucci, Consultant (State Department)
Program Development and CWE-DO
Bureau of Vocational Services
Division of Vocational Education
Connecticut State Department of Education
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Hartford, CT. 06115 (203) 566-3577

2. Russell Hebblewaite (Community)
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90B Progress Drive
Manchester, CT. 06040 (203) 643-2345

3. Barbara La Bree (Sex Equity)
CWE-DO Coordinator
Joel Barlow H. S.
Regional School District #9
Black Rock Turnpike
West Reading, CT. 06896 (203) 334-8003

4. Gertrude Sparks (Ethnic Minorities)
Distributive Education Intern
Bethridge Road
Bethany, CT. 06525 (203) 393-2949

5. Ellen N. Winer, Director
Center for Secondary School
Work Experience Education
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Project Staff

Stanley J. Schneider
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Metis Associates, Inc.
1775 Broadway, Suite 2204
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(212) 582-6700

METIS ASSOCIATES INC.

Project Advisory Committee

The Development of Occupational Task Structures and
Training-Time Standards for Cooperative Vocational Education

October 23, 1979
2:00 P. M. to 4:00 P. M.
State Office Building, Room 348

Agenda

1. Project Advisory Committee
   - Purpose and Goals
   - Composition
   - Functions
     - Election of Chairperson
     - Functional Areas
2. Orientation to Project
   - Background
   - Feasibility Study
   - Project Objectives
   - Project Design
3. Project Status Report
4. Open Discussion (Advice and Consultation)
5. Time Schedule
6. Other Business

1775 BROADWAY, NEW YORK, N.Y. 10019 (212) 582-6700

METIS ASSOCIATES INC.

Project Advisory Committee

The Development of Occupational Task Structures and
Training-Time Standards for Cooperative Vocational Education

January 29, 1980
2:00 P.M. to 4:00 P.M.
State Office Building, Room 348

Agenda

1. Dissemination Activities
   - AVA Conference
   - Cooperative Work Experience Education Conference (April 24-26)
2. Project Status Report
   - Review of Memorandum - Status as of December 31, 1979
   - Selection of Occupations
   - Acquisition of Task Analyses
   - Format for Task Structure
     - General Format
     - Corresponding Specific Skills Categories for Each Food Service Occupation
     - Task Structure
3. Advice and Consultation
   - Instructions for Subject Area Specialists
   - Recommendations for Subject Area Specialists
   - Recommendations for Training Coordinators
   - Open Discussion
4. Other Business

311. A-3

1775 BROADWAY, NEW YORK, N.Y. 10019 (212) 582-6700

METIS ASSOCIATES INC.

Food Services Experts: Meeting #1

The Development of Occupational Task Structures and Objective
Training-Time Standards for Cooperative Vocational Education

May 3, 1980
9:00 A.M. to 5:00 P.M.
Manchester Community College, Faculty East
Room 101

Agenda

1. Introduction to the Work
   - Background.
   - Feasibility Study.
   - Project Objectives.
   - Project Design.
2. Workshop Review of Materials
   - Comprehensiveness (cook/chef & waiter/waitress).
   - Relative Importance.
   - Entry vs. Advanced.
   - Occupational Commonalities.
   - Added Requirements for kitchen helper, short-order cook and counter person trainees.
   - Steps in and conditions for training.
3. Administrative Details
   - Time Sheets.
   - Expenses.
   - Plans for Next Meeting.
4. Other Business

311.

METIS ASSOCIATES INC.

Food Services Experts: Meeting #2

The Development of Occupational Task Structures and Objective Training-Time Standards for Cooperative Vocational Education

May 10, 1980
9:00 A.M. to 5:00 P.M.
Manchester Community College, Faculty East
Room 101

Agenda

1. Review of Revisions (based on Meeting #1)
   - Task list (cook).
   - Task specifications.
2. Workshop Review of Materials
   - Comprehensiveness (waiter/waitress).
   - Relative Importance.
   - Entry vs. Advanced.
   - Occupational Commonalities.
   - Added Requirements (kitchen helper, short-order cook, counter person trainees).
3. Training-Time Standards
   - Task Descriptions: Cook.
     - Steps.
     - Equipment.
     - Location.
     - Mastery Criteria.
   - Independent, Absolute Estimates.
4. Plans for Next Meeting
5. Other Business

METIS ASSOCIATES INC.

Food Services Experts: Meeting #3

The Development of Occupational Task Structures and Objective Training-Time Standards for Cooperative Vocational Education.

May 24, 1980
9:00 A.M. to 5:00 P.M.
Manchester Community College, Faculty East
Room 101

Agenda

1. Review of Revisions (based on Meeting #2)
    - Task list (waiter/waitress)
    - Task structure (cook)
    - Task specifications (waiter/waitress)
2. Training-Time Standards
    - Complete estimates for cook
        a - task descriptions
        b - mastery criteria
        c - independent, absolute estimates
        d - consensual estimates
    - Begin estimates for waiter/waitress
        - steps a through d above
3. Review Additional Occupational Task Lists for Comprehensiveness - 2:30 P.M.
    - Kitchen Helper
    - Short-Order Cook
    - Counter-Person
4. Plans for Next Meeting
5. Other Business

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METIS ASSOCIATES INC.

Food Services Experts: Meeting #4

The Development of Occupational Task Structures and Objective Training-Time Standards for Cooperative Vocational Education

June 9, 1980
9:00 A.M. to 5:00 P.M.
Manchester Community College, Faculty East
Room 101

Agenda

1. Review Task Lists
    - Comprehensiveness
        - Short-Order Cook
        - Counter-Person
    - Task Specifications
        - Short-Order Cook
        - Counter-Person
2. Training-Time Standards
    - Complete estimates for additional tasks for kitchen helper, short-order cook and counter-person
        - a. task descriptions
        - b. mastery criteria
        - c. independent, absolute estimates
        - d. consensual estimates
    - Complete direct magnitude estimation exercise for sampled tasks
3. Review and Synthesis
4. Plans for Future Work
5. Administrative Details
    - Time Sheets
    - Expenses
6. Other Business

311.

METIS ASSOCIATES INC.

STANLEY J. SCHNEIDER

EDUCATION

1978	New York University School of Education Ph.D. Candidate in Educational Psychology (All requirements complete except for dissertation.)
1972	New York University School of Education M.A. Educational Psychology
1969	Queens College of the City University of New York B.A. Psychology

PROFESSIONAL EXPERIENCE

1978 - Present	METIS ASSOCIATES, INC. Vice President
1974 - 1978	NEW YORK CITY BOARD OF EDUCATION Director of Research, Development and Evaluation Community School District 18
1971 - 1974	GREENLEIGH ASSOCIATES, INC. 1972 - 1974: Director, Educational Research Division 1971 - 1972: Member of the Research Staff
1970 - 1971	NEW YORK CITY BOARD OF EDUCATION Teacher, Elementary and Junior High School levels
1969 - 1970	McFADDEN-BARTEL, INC. Market Researcher

PROFESSIONAL SOCIETIES

American Educational Research Association
American Psychological Association
American Vocational Association

STANLEY J. SCHNEIDER (Continued)

PUBLICATIONS AND REPORTS

Educational Research and Evaluation

The Coleman Report: Yet Another Reanalysis. New York University, Draft, 1975.

Instructional Support System: Cost-Effectiveness Analysis. Community School District 18, Draft, 1975.

Instructional Support System: Technical Report I. Community School District 18, Draft, 1975.

Instructional Support System: Technical Report II. Community School District 18, Draft, 1976.

Study of the Effect of Student Mobility on Academic Performance. Community School District 18, 1977.

Evaluation Report: Systems Management Approach to Retraining and Training. New York University, Draft, 1978. (with L. P. Miller and E. L. Kronowitz)

Paraprofessionals: Role Identity and Conflict. Paper presented at the annual meeting of the American Psychological Association, September 1978, Toronto, Canada. (with B. Maslin and J. Nir)

Recent Project Reports and Proposals

School and Community Project for Abused and Neglected Children. U.S.O.E. Report, Eric Document #141436. Community School District 18, 1976. (with A. Tupper)

Systems Management Approach to Career Education. U.S.O.E. Career Education Proposal (funded for $150,000.), Community School District 18, 1976.

Systems Management Approach to Retraining and Training. U.S.O.E. Teacher Corps Proposal (funded for $253,000.), Community School District 18/New York University, 1976 and 1977. (with L. P. Miller)

Project SMART: Operations, Impact and Implications. *Documenta*. New York: Fordham University Press, 1977. (with L. P. Miller and E. L. Kronowitz)

STANLEY J. SCHNEIDER (Continued)

Recent Project Reports and Proposals (continued)

Emergency School Assistance Act: Basic and Pilot Desegregation Proposals. (Funded in the aggregate for $1,278,500.), Community School District 18, 1978. (with S. Eisman and A. Tupper)

Systems Management Approach to Consumer Knowledge. U.S.O.E. and New York State Title IVC Consumer Education Proposals. (Funded in the aggregate for $67,000.) Community School District 18, 1978. (with A. Tupper)

Reports of the Regents New York City Project. 1978-

RICHARD PARGAMENT

EDUCATION

1968	Princeton University Ph.D. Psychology
1967	Princeton University M.A. Psychology
1965	Bard College A.B.

PROFESSIONAL EXPERIENCE

1977 - Present	METIS ASSOCIATES INC. Vice President
1969 - 1977	RIVERSIDE RESEARCH INSTITUTE 1972-1977: Manager, Social Systems Division 1971-1972: Assistant Manager, Social Systems Division 1969-1971: Member of the Research Staff
1968 - 1969	RUTGERS-THE STATE UNIVERSITY Assistant Professor of Psychology

PROFESSIONAL SOCIETIES

American Educational Research Association
American Psychological Association
American Vocational Association

PUBLICATIONS AND REPORTS

Experimental Social Psychology

Effects of learning on judgment in the presence of discrepant anchors. Psychonomic Science, 1967, 9, 565-566. (with B. L. Koslin and S. Levine)

Predicting group structure from members' cognitions. Sociometry, 1968, 31, 64-75. (with B. L. Koslin, R.N. Haarlow, and M. Karlins)

RICHARD PARGAMENT (Continued)

Experimental Social Psychology (Continued)

Effects of attitude on the discrimination of opinion statements. Journal of Experimental Social Psychology, 1969, 5, 245-264. (with B. L. Koslin)

The role of experimenter and subject expectations in sensory deprivation. Representative Research in Social Psychology, 1971, 2 no. 1 (with P. Suedfeld, P. B. Landon, and Y. M. Epstein)

An uncertainty model of opinion change. In P. Suedfeld (Ed.), Attitude Change: the Competing Views, New York: Aldine-Atherton, 1971. (with B. L. Koslin and P. Suedfeld)

Classroom racial balance and students' interracial attitudes. Sociology of Education, 1972, 45, 387-407. (with S. Koslin, B. L. Koslin, and H. Waxman)

An experimental attack on smoking. International Journal of the Addictions, 1972, 7, 721-733. (with P. Suedfeld, P. B. Landon, and Y. M. Epstein)

Belief instability as a moderator variable in opinion change. The British Journal of Social and Clinical Psychology, 1973, 12, 18-33. (with B. L. Koslin, and P. Suedfeld)

Social Systems

Study of the Emergency Reporting System for New York City (Chapter 4). 1970.

Program Monitoring in the Patchogue-Medford Public Schools. 1971.

Guidelines for the Evaluation of Desegregation Programs in School Districts (Chapter III and Appendix). 1972.

Field Test of Racial Balance Indicators in an Urban School District. 1972.

The Coordination of Program Planning and Evaluation Systems for Occupational Education; The Implementation of the Reporting and Evaluation System for Occupational Education. 1973.

A Layman's Guide to the Reporting and Evaluation System for Occupational Education. 1973.

RICHARD PARGAMENT (Continued)

Social Systems (Continued)

The Coordination of Program Planning and Evaluation Systems for Occupational Education. 1975.

Design and Consulting Support for the Third Year of Implementation of the Comprehensive Instructional Management System (Sections V and VI). 1976.

An Instructional Support System for Occupational Education (ISS/OE). 1976.

The Continued Development and Implementation of the New York State Reporting System for Occupational Education. 1976.

An Evaluation of Fourth and Fifth Grade Reading Programs in Five New York City Community School Districts. 1976.

Reports of the Regents New York City Project. 1978-

The Development of Training-Time Standards and Related Management Tools for Connecticut's Cooperative Work Education Programs in Diversified Occupations (CWE-DO) Feasibility Study. 1978-

Task Structures and Training-Time Standards for:

- Cook
- Waiter/Waitress
- Kitchen Helper
- Short-Order Cook
- Counterperson

Occupational Skills for Cook

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Counter-person	Waiter/Waitress
A. Skills Used Prior to Job Execution (Planning and Organization)								
1. Follow appropriate sanitation procedures prior to job execution. (1) body (2) clothing (3) cosmetics		7	E	.5	X	X	X	X
2. Procure foodstuffs from steward or storeroom. (1) determine foodstuffs on hand (2) determine foodstuffs required (3) order foodstuffs		7	E	5	X	X	X	
3. Receive, store and inventory foodstuffs. (1) receive/assemble (record, inspect, report) (2) store (rotate stock) (3) inventory		7	E	14	X	X	X	
4. Set up stations for food preparation. (1) assemble supplies and foodstuffs		7	E	2.5	X	X	X	X

Cook Cont'd

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Counter-person	Waiter/ Waitress
(2) organize equipment bank station (s) a) broiler(s) b) fryer(s) c) grill(s) d) oven(s) e) steam table (s)		7	E	3	X	X	X	
(3) organize pantry station(s)								
a) beverages		7	E	.5	X	X	X	X
b) desserts		7	E	.5	X	X	X	X
c) salads		7	E	1.5	X	X	X	X
5. Review menus for production.								
(1) terminology of daily menu		7	E	1.25	X	X		
(2) format		7	E	1.25	X	X		
(3) quantity conversions		7	E	1.5	X	X		
(4) Truth in Menus Law		7	E	1	X	X		
6. Identify and understand the use and care of all major and minor kitchen equipment.								
(1) brazier pans		7	E	1.5	X	X		
(2) broiler		7	E	1	X	X		
(3) can openers		7	E	.5	X	X	X	X
(4) coffee urn and/or coffeemaker		7	E	1.5	X	X	X	X
(5) deep fat fryer		7	E	2	X	X	X	

6. (Cont'd)

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations: Kitchen Helper	Short-Order Cook	Counter-person	Waiter/Waitress
(6) dishwashing machine		7	E	1.5	X	X	X	X
(7) food mixer (e.g., Hobart and attachments)		7	E	2.5	X	X		
(8) French knives		7	E	3	X	X	X	X
(9) grill (gas, hot spot, cold spot)		7	E	2	X	X	X	
(10) heated carts		7	E	.5	X	X	X	X
(11) high speed cutter or chopper (buffalo chopper, food cutting machine)		7	E	1.5	X	X		
(12) hot/cold carts		7	E	.75	X	X	X	X
(13) hot plates or coffee warmers		7	E	.5	X	X	X	X
(14) kettles (steam jacketed, tilting steam jacketed, trunnion tilting)		7	E	2	X	X		
(15) meat and vegetable food grinder apparatus		7	E	1.5	X	X		
(16) meat saw		4	A	1.5	X			
(17) miscellaneous small tools (peelers, cleavers, etc.)		7	E	3.5	X	X	X	X
(18) ovens (conventional, micro-wave, convection, reconstitutional)		7	E	3.5	X	X	X	X
(19) proof boxes		7	E	1	X	X		
(20) qualheim (vegetable preparation machine)		7	E	1.25	X	X		
(21) refrigerators		7	E	1	X	X	X	X
(22) roll warmer		7	E	.5	X	X	X	X
(23) sautée pans		7	E	2	X	X	X	
(24) scales								
a) beam		7	E	1	X	X		
b) fan		3	E	.5	X			
c) spring		5½	E	.5	X	X	X	X
(25) slicer (automatic, gravity feed)		7	E	1.5	X	X	X	

Cook Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Counter-person	Waiter/ Waitress
6. (Cont'd.)								
(26) steamer - high pressure		7	E	1.5	X	X		
(27) steamer - low pressure		7	E	1.5	X	X		
(28) steamer - zero p.s.i. (pounds per square inch)		7	E	1	X	X		
(29) tilting skillet		7	E	1.75	X	X		
(30) toasters and toaster ovens		7	E	.5	X	X	X	X
(31) VCM (vertical cutter/mixer)		7	E	4.5	X	X		
7. Schedule food preparation tasks.		7	E	2.5	X	X	X	
B. Skills Used in Job Execution (Production)								
1. Throughout all food preparation and production tasks, follow appropriate sanitation practices.								
(1) maintain proper personal hygiene (body hands, clothing, cosmetics)		7	E	9.75	X	X	X	X
(2) control microorganisms (bacteria, mold, yeasts)								
(3) observe food handling laws								
(4) clean equipment								
(5) clean facilities								
(6) identify and discard unwholesome or adulterated foods		7	E	6.5	X	X	X	X
(7) utilize leftovers								

Cook Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Counter-person	Waiter/ Waitress
2. Prepare foodstuffs for cooking.								
(1) assemble specific ingredients and equipment, weigh and measure (dry, liquid)		7	E	4	X	X	X	
(2) prepare food for cook's use:								
a) bone								
1- meat		7	A	6	X	X		
2- fish		7	A	2	X	X		
3- poultry		7	A	3	X	X		
b) bread (meat, fish, poultry)		7	E	1.5	X	X	X	
c) pre-portion		7	E	3	X	X	X	
d) fruits (wash, peel, cut, etc.)		7	E	1.5	X	X	X	
e) grind (meat, poultry, cheese)		7	E	1.5	X	X	X	
f) pre-cook (sautée, parboil, brown, sear, etc.)		7	E	7.5	X	X	X	
g) season		7	E	3.75	X	X	X	
h) slice (meat, poultry, cheese)								
1- slicer		7	E	2	X	X	X	
2- hand carving		7	E	4	X	X	X	
i) vegetables (wash, peel, cut, etc.)		7	E	5	X	X	X	

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Counter-person	Waiter/ Waitress
3. Cook designated menu items.								
(1) baked goods								
a) yeast rolls		7	A	3	X			
b) yeast breads		7	A	5	X			
c) quick breads		7	A	2.5	X			
d) pies		7	A	2.5	X			
e) fruit fillings		7	A	1.5	X			
f) cakes		7	A	4	X			
g) cookies		7	A	4	X			
h) pastries		7	A	4	X			
i) custards and puddings		7	A	4	X			
j) icings		7	A	5	X			
(2) convenience foods (including dehydrated or concentrated foods)		7	E	3	X	X	X	
(3) eggs								
a) fried		7	E	1.75	X	X	X	
b) omelet		7	E	2	X	X	X	
c) poached		7	E	1.5	X	X	X	
d) scrambled		7	E	1	X	X	X	
(4) French Toast		7	E	1	X	X	X	

Cook Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Counter-person	Waiter/ Waitress
(5) fruits		7	E	2	X	X	X	
(6) hot beverages (cocoa, coffee, tea)		7	E	3	X	X	X	X
(7) hot cereals		7	E	1	X	X	X	
(8) meats (beef, lamb, pork, veal)								
a) bake/roast		7	E/A	3	X	X	X	
b) barbecue		7	E/A	2	X	X	X	
c) braise		7	E/A	2.5	X	X	X	
d) broil		7	E/A	1.75	X	X	X	
e) combination cooking		7	E/A	3	X	X	X	
f) fry and deep fry		7	E/A	2.5	X	X	X	
g) poach		7	E/A	1	X	X	X	
(9) pancakes and waffles		7	E/A	1.75	X	X	X	
(10) pasta (rices, macaroni, spaghetti, noodles)		7	E/A	3	X	X	X	
(11) poultry (chicken, turkey, duckling, game)								
a) bake/roast		7	E/A	2.75	X	X	X	
b) barbecue		7	E/A	2	X	X	X	
c) braise		7	E/A	2	X	X	X	
d) broil		7	E/A	1.75	X	X	X	

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Counter-person	Waiter/ Waitress
(11) (Cont'd.)								
e) combination cooking		7	E/A	3	X	X	X	
f) fry and deep fry		7	E/A	2	X	X	X	
g) poach		7	E/A	1	X	X	X	
(12) salad dressings (basic, Italian, Russian, sour cream, fruit, cooked, emulsified)		7	E/A	4	X	X	X	
(13) salads (green, gelatin, fruit and vegetable)		7	E	12	X	X	X	
(14) sandwiches (hot, cold, spreads and fillings)		7	E	6	X	X	X	
(15) sauces								
a) brown		7	E	4	X	X	X	
b) bechamel		7	E	2.5	X	X	X	
c) tomato		7	E	2.5	X	X	X	
d) veloute		7	E	2.5	X	X	X	
e) hollandaise		7	E	2	X	X	X	
f) dessert		7	E	1.5	X	X	X	
g) gravies		7	E	2.75	X	X	X	
h) glazes		7	E	2	X	X	X	
i) roux		7	E	2.5	X	X	X	

Cook Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Counter-person	Waiter/ Waitress
(16) seafood (fin, fresh water, shellfish, mollusks)								
a) bake		7	E/A	1	X	X	X	
b) broil		7	E/A	1.25	X	X	X	
c) combination cooking		7	E/A	2.25	X	X	X	
d) fry and deep fry		7	E/A	1.5	X	X	X	
e) poach		7	E/A	1.75	X	X	X	
f) sautée		7	E/A	3	X	X	X	
g) steam		7	E/A	1	X	X	X	
(17) soups								
a) thick		7	E/A	2.75	X	X	X	
b) bisques and chowders		7	E/A	4.5	X	X	X	
c) consommés		7	E/A	3.5	X	X	X	
d) aspic		7	E/A	2.5	X	X	X	
e) minestrone		7	E/A	3	X	X	X	
f) gazpacho		7	E/A	2	X	X	X	
g) vichyssoise		7	E/A	3	X	X	X	

Cook Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations: Kitchen Helper	Related Occupations: Short-Order Cook	Related Occupations: Counter-person	Related Occupations: Waiter/ Waitress
(18) stocks								
a) brown		7	E/A	2	X	X	X	
b) fish		7	E/A	1.5	X	X	X	
c) chicken		7	E/A	2	X	X	X	
d) vegetable		7	E/A	1.5	X	X	X	
(19) vegetables (green, red, yellow, white)								
a) au gratin		7	E	2	X	X	X	
b) bake		7	E	2	X	X	X	
c) boil		7	E	2	X	X	X	
d) broil		7	E	1	X	X	X	
e) combination cooking		7	E	2	X	X	X	
f) fry and deep fry		7	E	2	X	X	X	
g) parboil		7	E	1	X	X	X	
h) sautée		7	E	1.5	X	X	X	
i) steam		7	E	1.25	X	X	X	
(20) vegetarian specialty items		4	E/A	3	X	X	X	
4. Clean up and sanitize on an intermediate/ continual basis.								
(1) wash		7	E	1.25	X	X	X	X
(2) sanitize		7	E	1.75	X	X	X	X

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Counter-person	Waiter/ Waitress
5. Prepare food for serving.								
(1) arrange food for service (merchandize)		7	E/A	1.25	X	X	X	
(2) cut portions (pre-portion, portion control)		7	E	1.25	X	X		
(3) dish desserts		4	E	2	X	X	X	X
(4) fill containers		7	E	1	X	X	X	
(5) garnish		7	E/A	2.25	X	X	X	
(6) ladling techniques		7	E	.75	X	X	X	X
(7) plate cakes and pies		4	E	1	X	X	X	X
(8) proper holding techniques								
a) holding temperatures		7	E	2	X	X	X	X
b) codes, rules and regulations		7	E	2.5	X	X	X	X
(9) slice (automatic, gravity feed and hand)		7	E	3.5	X	X	X	
(10) trim fat from meats		7	E	1.25	X	X	X	
6. Obey safety rules when using equipment and tools in order to prevent:								
(1) falls		7	E	1	X	X	X	X
(2) choking (Heimlich maneuver)		7	E	1.5	X	X	X	X
(3) cuts		7	E	1.25	X	X	X	X
(4) burns		7	E	1	X	X	X	X

Cook Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations: Kitchen Helper	Short-Order Cook	Counter-person	Waiter/ Waitress
6. (Cont'd).								
(5) strains		7	E	1	X	X	X	X
(6) shocks		7	E	2	X	X	X	X
(7) explosions and fires		7	E	2	X	X	X	X
7. Monitor and supervise production.								
(1) evaluate foods by:								
a) tasting and smelling		7	E/A	2.5	X	X	X	
b) piercing		7	E/A	1.5	X	X	X	
c) viewing		7	E/A	2	X	X	X	X
d) feeling		7	E/A	2	X	X	X	
(2) calculate food waste (monitor and record leftovers)		7	E	3	X	X	X	
(3) review schedules, role responsibilities, policies and standards with employees		7	E	4				
C. Skills Used Following Job Execution (Follow Up)								
1. Transfer prepared food to serving location.								
(1) place prepared food items in temporary storage		7	E	2	X	X	X	X
(2) set up buffet table		7	E	1.5	X	X	X	X
(3) set up serving counter (cafeteria style)		7	E	1.75	X	X	X	X

Cook Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations: Kitchen Helper	Short-Order Cook	Counter-person	Waiter/Waitress
1. (Cont'd.)								
(4) maintain time and temperature controls		7	E	1.75	X	X	X	X
2. Store unused foodstuffs.								
(1) collect, gather and prepare leftovers for storage (cover, date, label items, etc.)		7	E	2	X	X	X	X
(2) follow proper storage techniques								
a) stock rotation		7	E	2	X	X	X	X
b) temperature controls		7	E	1.5	X	X	X	X
3. Clean and/or store equipment and tools in accord with safety rules and sanitation procedures.								
(1) clean and properly sanitize:								
a) broilers		7	E	1	X	X	X	
b) coffee urn and bunamatic		7	E	1.25	X	X	X	X
c) counters		7	E	1	X	X	X	X
d) deep fat fryers		7	E	1.75	X	X	X	
e) food trucks		7	E	1	X	X	X	X
f) grills		7	E	1.25	X	X	X	
g) hoods and filters		7	E	1.75	X	X	X	
h) hot tables		7	E	1	X	X	X	X

Cook Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Counter-person	Waiter/ Waitress
i) kettles		7	E	1.5	X	X	X	
j) ovens		7	E	1	X	X	X	
k) ranges		7	E	1	X	X	X	
l) refrigerators		7	E	1	X	X	X	X
m) steam equipment		7	E	1.25	X	X	X	
n) work tables		7	E	1.5	X	X	X	X
(2) maintain safe and sanitary working conditions (proper ventilation, fire extinguisher, first aid kit, fire blankets, etc.)		7	E	2	X	X	X	X
(3) check conditions, quantity and rotation of goods and foodstuffs in storage areas		7	E	2.25	X	X	X	
(4) record keeping		7	E	1.25				
4. Monitor, supervise and evaluate								
(1) food and labor cost effectiveness (including portion control)		7	E	2.5				
(2) personnel performance		7	E	2.5				
(3) production procedures and records		7	E	3				
(4) quality control		7	E	2.75				
(5) safety practices		7	E	1.75				
(6) sanitation practices		7	E	2				
(7) service procedures		7	E	2.5				

Occupational Skills for Waiter/Waitress

					Related Occupations			
	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Kitchen Helper	Short-Order Cook	Counter-person	Cook
A. Skills Used Prior to Job Execution (Planning & Organization)								
1. Follow appropriate sanitation practices prior to job execution. (1) body (2) clothing (3) cosmetics		7	E	3.5	X	X	X	X
2. Procure supplies. (1) determine supplies required for station(s) (2) requisition or assemble supplies		7	E	2				
3. Prepare stations for service. (1) serving area								
a) condiments (filling salt and pepper, sugar bowls, ketchup bottles)		7	E	1	X		X	
b) serving pieces		7	E	1	X		X	
c) tableware and linens		7	E	1	X		X	
d) water service		7	E	.75	X		X	

Waiter/Waitress Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations: Kitchen Helper	Short-Order Cook	Counter-person	Cook
3. (Cont'd.)								
(2) soiled tableware area								
a) busing trays		7	E	1				
b) "flying bridge"		7	E	.5				
c) refuse containers		7	E	.75				
d) water service		7	E	1				
4. Learn modes/styles of service.								
(1) American		7	E	2				X
(2) buffet		7	E	2				X
(3) English		2	E	1				X
(4) French		2	A	2.5				X
(5) Russian		4	A	2				X
5. Learn to use necessary equipment.								
(1) blender		7	E	1	X	X	X	X
(2) bun warmer		7	E	.5	X	X	X	X
(3) can openers		7	E	.75	X	X	X	X
(4) cash register		7	E	3			X	
(5) coffee urn and/or coffeemaker		7	E	1.5	X	X	X	X
(6) cork screw		7	E	1				

Waiter/Waitress Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Counter-person	Cook
5. (Cont'd.)								
(7) crumb sweeper		4	E	.75				
(8) dish washing machine		4	E	1.25	X	X	X	X
(9) heated cart		4	E	.5	X	X	X	X
(10) hot/cold cart		4	E	.75	X	X	X	X
(11) hot plates and/or coffee warmers		7	E	.75	X	X	X	X
(12) miscellaneous small tools (e.g., knives, peelers)		7	E	1	X	X	X	X
(13) oven (micro-wave)		4	E	.75	X	X	X	X
(14) refrigerator		7	E	.75	X	X	X	X
(15) scale (spring)		3	E	.75	X	X	X	X
(16) toasters		7	E	.5	X	X	X	X
6. Monitor planning and organization.								
(1) check tableware, serving pieces and glasses for stains before using		7	E	.5	X	X	X	X
B. Skills Used in Job Execution (Production)								
1. Follow appropriate sanitation practices when serving.								
(1) maintain proper personal hygiene (body, hands, clothing, cosmetics, jewelery and hair)		7	E	1.25	X	X	X	X

Waiter/Waitress Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations: Kitchen Helper	Related Occupations: Short-Order Cook	Related Occupations: Counter-person	Related Occupations: Cook
1. (Cont'd.)								
(2) observe food handling laws		7	E	2	X	X	X	X
(3) handle leftovers properly		7	E	1	X	X	X	X
(4) clean and sanitize equipment		7	E	1	X	X	X	X
(5) dispose of waste materials properly		7	E	.75	X	X	X	X
(6) identify and discard unwholesome or adulterated foods		7	E	1.25	X	X	X	X
2. Check reservations.		7	E	1				X
3. Set tables.								
(1) accessories (condiment servers, bread basket, candles, ash trays, etc.)		7	E	1.25				
(2) changing table cloths		7	E	1				
(3) cover arrangements (including napkin folding techniques)		7	E	2				
(4) tableware (glasses, dishes, flatware)		7	E	1				
4. Preliminaries to service and presentation.								
(1) greet patrons and seat guests		7	E	1				
(2) present menu to patrons		7	E	1				

Waiter/Waitress Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Counter-person	Cook
4. (Cont'd.) (3) answer questions regarding: a) menu choices b) substitutions c) food preparation methods d) food preparation times		7	E	3				
(4) take patrons' orders (including cocktail orders) a) make suggestions (appropriate wines, etc.) b) listen well c) follow order-taking techniques (including proper etiquette)		7	E	2.5				
(5) relay orders to kitchen (follow proper timing techniques)		7	E	1.75				
(6) fill water glasses		7	E	.5				
5. Prepare food for serving. Portion or serve the following foods: (1) beverages (hot & cold, including coffees with liquer, Spanish coffee, flaming coffees and Irish coffee)		7	E	1.5	X	X	X	X
(2) bread, rolls		7	E	.5	X	X	X	X

Waiter/Waitress Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations: Kitchen Helper	Related Occupations: Short-Order Cook	Related Occupations: Counter-person	Related Occupations: Cook
5. (Cont'd.)								
(3) butter		7	E	.5	X	X	X	X
(4) cereals		3	E	.5	X	X	X	X
(5) desserts		3	E	1	X	X	X	X
(6) garnishes or relishes		7	E	1	X	X	X	X
(7) juices		7	E	.5	X	X	X	X
(8) meats		3	E	1	X	X	X	X
(9) salads		2	E	1	X	X	X	X
(10) salad dressings		7	E	.75	X	X	X	X
(11) soups (hot and cold)		4	E	.5	X	X	X	X
(12) take-out foods		7	E	1	X	X	X	X
6. Serve food.								
(1) carry and use trays, covers and tray stands		7	E	3				
(2) serve according to rules of etiquette and proper serving techniques		7	E	3				
(3) replenish coffee, water, rolls and butter		7	E	.75				
(4) ask patrons served how they are enjoying the meal		7	E	.75				

Waiter/Waitress Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Counter-person	Cook
7. Clean up on an intermediate/continual basis.								
(1) chairs		7	E	.5				
(2) coffee urn		7	E	.5	X	X	X	X
(3) counters		7	E	.5		X	X	
(4) food trucks		7	E	.5				
(5) guest take out ("doggie bag")		7	E	.5				
(6) maintain service station		7	E	.75				
(7) ovens (micro-wave)		7	E	.5	X	X	X	X
(8) remove and return soiled dishes to dishwashing area		7	E	1	X		X	
(9) table tops		7	E	1				
8. Obey safety rules when using dining room equipment in order to prevent or avoid:								
(1) burns		7	E	1	X	X	X	X
(2) choking (Heimlich maneuver)		7	E	1.75	X	X	X	X
(3) cuts		7	E	.75	X	X	X	X
(4) explosions and fires		7	E	1	X	X	X	X
(5) falls		7	E	.75	X	X	X	X
(6) shocks		7	E	1	X	X	X	X
(7) strains		7	E	.75	X	X	X	X

Waiter/Waitress Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Counter-person	Cook
9. Monitor and supervise.								
(1) busboys		7	E	1				
(2) review schedules, roles, policies and standards (Occupational Safety and Health Act)		7	E	2	X	X	X	X
C. Skills Used Following Job Execution (Follow-Up)								
1. Replenish supplies at server's station.								
(1) crockery (e.g., salad bar dressing containers)		7	E	.5				
(2) napkins, paper products, etc.		7	E	.5				
(3) sugar, salt and pepper		7	E	.75				
2. Clean and shut down stations in accord with safety rules and sanitation procedures.								
(1) serving station area								
a) beverage service		7	E	2	X	X	X	X
b) bun warmer		7	E	.5	X	X	X	X
c) condiments		7	E	.75				
d) serving pieces		7	E	.5				
e) storage compartment (side board)		7	E	.5				
f) tables and chairs		7	E	.75				

Waiter/Waitress Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations: Kitchen Helper	Related Occupations: Short-Order Cook	Related Occupations: Counter-person	Related Occupations: Cook
2. (Cont'd.)								
g) tableware		7	E	.5				
h) water service		7	E	.5				
(2) soiled tableware area								
a) busing trays and stands		7	E	.5				
b) refuse containers		7	E	.5				
c) soiled dish receptacles		7	E	.5				
(3) maintain safe working conditions		7	E	.75				
3. Monitor, supervise and evaluate								
(1) buffet (presentation, speed, efficiency, traffic patterns)		7	E	1.5				
(2) guest comments		7	E	1	X	X	X	X
(3) personnel performance (busboys)		7	E	1.5				
(4) production (serving) procedures (including self-evaluation)		7	E	1				
(5) safety practices		7	E	.75	X	X	X	X
(6) sanitation practices		7	E	1	X	X	X	X

Occupational Skills for Kitchen Helper

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Short-Order Cook	Counter-person	Waiter/ Waitress
A. Skills Used Prior to Job Execution (Planning and Organization)								
1. Follow appropriate sanitation procedures prior to job execution. (1) body (2) clothing (3) cosmetics		7	E	.5	X	X	X	X
2. Procure foodstuffs from steward or storeroom. (1) determine foodstuffs on hand (2) determine foodstuffs required (3) order foodstuffs		4	E	5	X	X	X	
3. Receive, store and inventory foodstuffs. (1) receive/assemble (record, inspect, report) (2) store (rotate stock) (3) inventory		5	E	14	X	X	X	
4. Set up stations for food preparation. (1) assemble supplies and foodstuffs		7	E	2.5	X	X	X	X

Kitchen Helper Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations: Cook	Short-Order Cook	Counter-person	Waiter/ Waitress
(2) organize equipment bank station(s)								
a) broiler(s) b) fryer(s) c) grill(s) d) oven(s) e) steam table(s)		7	E	3	X	X	X	
(3) organize pantry station(s)								
a) beverages		7	E	.5	X	X	X	X
b) desserts		4	E	.5	X	X	X	X
c) salads		4	E	1.5	X	X	X	X
5. Review menus for production.								
(1) terminology of daily menu		4	A	1.25	X	X		
(2) format		4	A	1.25	X	X		
(3) quantity conversions		4	A	1.5	X	X		
(4) Truth in Menus Law		3	A	1	X	X		
6. Identify and understand the use and care of all major and minor kitchen equipment.								
(1) brazier pans		3	E	1.5	X	X		
(2) broiler		7	E	1	X	X		
(3) can openers		7	E	.5	X	X	X	X
(4) coffee urn and/or coffeemaker		7	E	1.5	X	X	X	X
(5) deep fat fryer		7	E	2	X	X	X	

Kitchen Helper Cont'd.

6. (Cont'd)

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Short-Order Cook	Counter-person	Waiter/ Waitress
(6) dishwashing machine		7	E	1.5	X	X	X	X
(7) food mixer (e.g., Hobart and attachments)		7	E	2.5	X	X		
(8) French knives		7	E	3	X	X	X	X
(9) grill (gas, hot spot, cold spot)		7	E	2	X	X	X	
(10) heated carts		7	E	.5	X	X	X	X
(11) high speed cutter or chopper (buffalo chopper, food cutting machine)		7	E	1.5	X	X		
(12) hot/cold carts		7	E	.75	X	X	X	X
(13) hot plates or coffee warmers		7	E	.5	X	X	X	X
(14) kettles (steam jacketed, tilting steam jacketed, trunnion tilting)		7	E	2	X	X		
(15) meat and vegetable food grinder apparatus		7	E	1.5	X	X		
(16) meat saw		3	A	1.5	X			
(17) miscellaneous small tools (peelers, cleavers, etc.)		7	E	3.5	X	X	X	X
(18) ovens (conventional, micro-wave, convection, reconstitutional)		7	E	3.5	X	X	X	X
(19) proof boxes		7	E	1	X	X		
(20) qualheim (vegetable preparation machine)		7	E	1.25	X	X		
(21) refrigerators		7	E	1	X	X	X	X
(22) roll warmer		7	E	.5	X	X	X	X
(23) sautee pans		7	E	2	X	X	X	
(24) scales								
a) beam		7	E	1	X	X		
b) fan		4	E	.5	X			
c) spring		7	E	.5	X	X	X	X
(25) slicer (automatic, gravity feed)		7	E	1.5	X	X	X	

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Short-Order Cook	Counter-person	Waiter/ Waitress
6. (Cont'd.)								
(26) steamer - high pressure		7	E	1.5	X	X		
(27) steamer - low pressure		7	E	1.5	X	X		
(28) steamer - zero p.s.i. (pounds per square inch)		7	E	1	X	X		
(29) tilting skillet		5	E	1.75	X	X		
(30) toasters and toaster ovens		7	E	.5	X	X	X	X
(31) VCM (vertical cutter/mixer)		5	E	4.5	X	X		
7. Schedule food preparation tasks.		2	A	2.5	X	X	X	
B. Skills Used in Job Execution (Production)								
1. Throughout all food preparation and production tasks, follow appropriate sanitation practices.								
(1) maintain proper personal hygiene (body hands, clothing, cosmetics) (2) control microorganisms (bacteria, mold, yeasts) (3) observe food handling laws (4) clean equipment (5) clean facilities		7	E	9.75	X	X	X	X
(6) identify and discard unwholesome or adulterated foods (7) utilize leftovers		7	E	6.5	X	X	X	X

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Short-Order Cook	Counter-person	Waiter/ Waitress
2. Prepare foodstuffs for cooking.								
(1) assemble specific ingredients and equipment, weigh and measure (dry, liquid)		7	E	4	X	X	X	
(2) prepare food for cook's use:								
a) bone								
1- meat		5	A	6	X	X		
2- fish		5	A	2	X	X		
3- poultry		5	A	3	X	X		
b) bread (meat, fish, poultry)		7	E	1.5	X	X	X	
c) pre-portion		7	E	3	X	X	X	
d) fruits (wash, peel, cut, etc.)		7	E	1.5	X	X	X	
e) grind (meat, poultry, cheese)		7	E	1.5	X	X	X	
f) pre-cook (sautée, parboil, brown, sear, etc.)		7	E	7.5	X	X	X	
g) season		4	E	3.75	X	X	X	
h) slice (meat, poultry, cheese)								
1- slicer		7	E	2	X	X	X	
2- hand carving		7	E	4	X	X	X	
i) vegetables (wash, peel, cut, etc.)		7	E	5	X	X	X	

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Short-Order Cook	Counter-person	Waiter/ Waitress
3. Cook designated menu items.								
(1) baked goods								
a) yeast rolls		3	A	3	X			
b) yeast breads		3	A	5	X			
c) quick breads		3	A	2.5	X			
d) pies		3	A	2.5	X			
e) fruit fillings		3	A	1.5	X			
f) cakes		3	A	4	X			
g) cookies		3	A	4	X			
h) pastries		3	A	4	X			
i) custards and puddings		3	A	4	X			
j) icings		3	A	5	X			
(2) convenience foods (including dehydrated or concentrated foods)		5	E	3	X	X	X	
(3) eggs								
a) fried		7	E	1.75	X	X	X	
b) omelet		7	E	2	X	X	X	
c) poached		7	E	1.5	X	X	X	
d) scrambled		7	E	1	X	X	X	
(4) French Toast		7	E	1	X	X	X	

Kitchen Helper Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Short-Order Cook	Counter-person	Waiter/ Waitress
(5) fruits		5	E	2	X	X	X	
(6) hot beverages (cocoa, coffee, tea)		7	E	3	X	X	X	X
(7) hot cereals		7	E	1	X	X	X	
(8) meats (beef, lamb, pork, veal)								
a) bake/roast		5	E/A	3	X	X	X	
b) barbecue		5	E/A	2	X	X	X	
c) braise		4	E/A	2.5	X	X	X	
d) broil		7	E/A	1.75	X	X	X	
e) combination cooking		5	E/A	3	X	X	X	
f) fry and deep fry		7	E/A	2.5	X	X	X	
g) poach		2	E/A	1	X	X	X	
(9) pancakes and waffles		7	E/A	1.75	X	X	X	
(10) pasta (rices, macaroni, spaghetti, noodles)		7	E/A	3	X	X	X	
(11) poultry (chicken, turkey, duckling, game)								
a) bake/roast		7	E/A	2.75	X	X	X	
b) barbecue		4	E/A	2	X	X	X	
c) braise		4	E/A	2	X	X	X	
d) broil		7	E/A	1.75	X	X	X	

Kitchen Helper Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Short-Order Cook	Counter-person	Waiter/ Waitress
(11) (Cont'd.)								
e) combination cooking		5	E/A	3	X	X	X	
f) fry and deep fry		7	E/A	2	X	X	X	
(12) salad dressings (basic, Italian, Russian, sour cream, fruit, cooked, emulsified)		4	E/A	4	X	X	X	
(13) salads (green, gelatin, fruit and vegetable)		7	E	12	X	X	X	
(14) sandwiches (hot, cold, spreads and fillings)		7	E	6	X	X	X	
(15) sauces								
a) brown		3	A	4	X	X	X	
b) bechamel		3	A	2.5	X	X	X	
c) tomato		3	A	2.5	X	X	X	
d) veloute		3	A	2.5	X	X	X	
e) hollandaise		3	A	2	X	X	X	
f) dessert		3	A	1.5	X	X	X	
g) gravies		3	A	2.75	X	X	X	
h) glazes		3	A	2	X	X	X	
i) roux		3	A	2.5	X	X	X	

Kitchen Helper Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Short-Order Cook	Counter-person	Waiter/ Waitress
(16) seafood (fin, fresh water, shellfish, mollusks)								
a) bake		6	A	1	X	X	X	
b) broil		7	A	1.25	X	X	X	
c) combination cooking		4	A	2.25	X	X	X	
d) fry and deep fry		7	A	1.5	X	X	X	
e) poach		2	A	1.75	X	X	X	
f) sautée		1	A	3	X	X	X	
g) steam		7	A	1	X	X	X	
(17) soups								
a) thick		7	A	2.75	X	X	X	
b) bisques and chowders		7	A	4.5	X	X	X	
c) consommés		7	A	3.5	X	X	X	
d) aspic		7	A	2.5	X	X	X	
e) minestrone		7	A	3	X	X	X	
f) gazpacho		7	A	2	X	X	X	
g) vichyssoise		7	A	3	X	X	X	

Kitchen Helper Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Short-Order Cook	Counter-person	Waiter/ Waitress
(18) stocks								
a) brown		7	E/A	2	X	X	X	
b) fish		7	E/A	1.5	X	X	X	
c) chicken		7	E/A	2	X	X	X	
d) vegetable		7	E/A	1.5	X	X	X	
(19) vegetables (green, red, yellow, white)								
a) au gratin		2	A	2	X	X	X	
b) bake		7	E	2	X	X	X	
c) boil		7	E	2	X	X	X	
d) broil		5	E	1	X	X	X	
e) combination cooking		4	E	2	X	X	X	
f) fry and deep fry		7	E	2	X	X	X	
g) parboil		7	E	1	X	X	X	
h) sautée		7	E	1.5	X	X	X	
i) steam		3	A	1.25	X	X	X	
(20) vegetarian specialty items		3	A	3	X	X	X	
4. Clean up and sanitize on an intermediate/ continual basis.								
(1) wash		7	E	1.25	X	X	X	X
(2) sanitize		7	E	1.75	X	X	X	X

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Short-Order Cook	Counter-person	Waiter/ Waitress
5. Prepare food for serving.								
(1) arrange food for service (merchandize)		3	E/A	1.25	X	X	X	
(2) cut portions (pre-portion, portion control)		2	E	1.25	X	X		
(3) dish desserts		7	E	2	X	X	X	X
(4) fill containers		7	E	1	X	X	X	
(5) garnish		4	E/A	2.25	X	X	X	
(6) ladling techniques		7	E	.75	X	X	X	X
(7) plate cakes and pies		7	E	1	X	X	X	X
(8) proper holding techniques								
a) holding temperatures		7	E	2	X	X	X	X
b) codes, rules and regulations		7	E	2.5	X	X	X	X
(9) slice (automatic, gravity feed and hand)		5	E	3.5	X	X	X	
(10) trim fat from meats		7	E	1.25	X	X	X	
6. Obey safety rules when using equipment and tools in order to prevent:								
(1) falls		7	E	1	X	X	X	X
(2) choking (Heimlich maneuver)		7	E	1.5	X	X	X	X
(3) cuts		7	E	1.25	X	X	X	X
(4) burns		7	E	1	X	X	X	X

Kitchen Helper Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Short-Order Cook	Counter-person	Waiter/ Waitress
6. (Cont'd).								
(5) strains		7	E	1	X	X	X	X
(6) shocks		7	E	2	X	X	X	X
(7) explosions and fires		7	E	2	X	X	X	X
7. Monitor and supervise production.								
(1) evaluate foods by:								
a) tasting and smelling		4	A	2.5	X	X	X	
b) piercing		4	A	1.5	X	X	X	
c) viewing		4	A	2	X	X	X	X
d) feeling		7	A	2	X	X	X	
(2) calculate food waste (monitor and record leftovers)		7	E	3	X	X	X	
C. Skills Used Following Job Execution (Follow Up)								
1. Transfer prepared food to serving location.								
(1) place prepared food items in temporary storage		7	E	2	X	X	X	X
(2) set up buffet table		7	E	1.5	X	X	X	X
(3) set up serving counter (cafeteria style)		7	E	1.75	X	X	X	X

Kitchen Helper Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Short-Order Cook	Counter-person	Waiter/Waitress
1. (Cont'd.)								
(4) maintain time and temperature controls		7	E	1.75	X	X	X	X
2. Store unused foodstuffs.								
(1) collect, gather and prepare leftovers for storage (cover, date, label items, etc.)		7	E	2	X	X	X	X
(2) follow proper storage techniques								
a) stock rotation		7	E	2	X	X	X	X
b) temperature controls		7	E	1.5	X	X	X	X
3. Clean and/or store equipment and tools in accord with safety rules and sanitation procedures.								
(1) clean and properly sanitize:								
a) broilers		7	E	1	X	X	X	
b) coffee urn and bunamatic		7	E	1.25	X	X	X	X
c) counters		7	E	1	X	X	X	X
d) deep fat fryers		7	E	1.75	X	X	X	
e) food trucks		7	E	1	X	X	X	X
f) grills		7	E	1.25	X	X	X	
g) hoods and filters		7	E	1.75	X	X	X	
h) hot tables		7	E	1	X	X	X	X

Kitchen Helper Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Short-Order Cook	Counter-person	Waiter/ Waitress
i) kettles		7	E	1.5	X	X	X	
j) ovens		7	E	1	X	X	X	
k) ranges		7	E	1	X	X	X	
l) refrigerators		7	E	1	X	X	X	X
m) steam equipment		7	E	1.25	X	X	X	
n) work tables		7	E	1.5	X	X	X	X
(2) maintain safe and sanitary working conditions (proper ventilation, fire extinguisher, first aid kit, fire blankets, etc.)		7	E	2	X	X	X	X
(3) check conditions, quantity and rotation of goods and foodstuffs in storage areas		3	A	2.25	X	X	X	

Occupational Skills for Short-Order Cook

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Kitchen Helper	Counter-person	Waiter/ Waitress
A. Skills Used Prior to Job Execution (Planning and Organization)								
1. Follow appropriate sanitation procedures prior to job execution. (1) body (2) clothing (3) cosmetics		7	E	.5	X	X	X	X
2. Procure foodstuffs from steward or storeroom. (1) determine foodstuffs on hand (2) determine foodstuffs required (3) order foodstuffs		5	E	5	X	X	X	
3. Receive, store and inventory foodstuffs. (1) receive/assemble (record, inspect, report) (2) store (rotate stock) (3) inventory		5	E	14	X	X	X	
4. Set up stations for food preparation. (1) assemble supplies and foodstuffs		7	E	2.5	X	X	X	X

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Kitchen Helper	Counter-person	Waiter/ Waitress
(2) organize equipment bank station(s)								
a) broiler(s)		7	E	3	X	X	X	
b) fryer(s)								
c) grill(s)								
d) oven(s)								
e) steam table(s)								
(3) organize pantry station(s)								
a) beverages		7	E	.5	X	X	X	X
b) desserts		7	E	.5	X	X	X	X
c) salads		7	E	1.5	X	X	X	X
5. Review menus for production.								
(1) terminology of daily menu		7	E	1.25	X	X		
(2) format		7	E	1.25	X	X		
(3) quantity conversions		7	E	1.5	X	X		
(4) Truth in Menus Law		7	E	1	X	X		
6. Identify and understand the use and care of all major and minor kitchen equipment.								
(1) brazier pans		7	E	1.5	X	X		
(2) broiler		7	E	1	X	X		
(3) can openers		7	E	.5	X	X	X	X
(4) coffee urn and/or coffeemaker		7	E	1.5	X	X	X	X
(5) deep fat fryer		7	E	2	X	X	X	

Short-Order Cook Cont'd.

6. (Cont'd)

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Kitchen Helper	Counter-person	Waiter/Waitress
(6) dishwashing machine		7	E	1.5	X	X	X	X
(7) food mixer (e.g., Hobart and attachments)		7	E	2.5	X	X		
(8) French knives		7	E	3	X	X	X	X
(9) grill (gas, hot spot, cold spot)		7	E	2	X	X	X	
(10) heated carts		7	E	.5	X	X	X	X
(11) high speed cutter or chopper (buffalo chopper, food cutting machine)		7	E	1.5	X	X		
(12) hot/cold carts		7	E	.75	X	X	X	X
(13) hot plates or coffee warmers		7	E	.5	X	X	X	X
(14) kettles (steam jacketed, tilting steam jacketed, trunnion tilting)		7	E	2	X	X		
(15) meat and vegetable food grinder apparatus		7	E	1.5	X	X		
(16) miscellaneous small tools (peelers, cleavers, etc.)		7	E	3.5	X	X	X	X
(17) ovens (conventional, micro-wave, convection, reconstitutional)		7	E	3.5	X	X	X	X
(18) proof boxes		7	E	1	X	X		
(19) qualheim (vegetable preparation machine)		7	E	1.25	X	X		
(20) refrigerators		7	E	1	X	X	X	X
(21) roll warmer		7	E	.5	X	X	X	X
(22) sautée pans		7	E	2	X	X	X	
(23) scales								
a) beam		6	E	1	X	X		
b) spring		5½	E	.5	X	X	X	X
(24) slicer (automatic, gravity feed)		7	E	1.5	X	X	X	

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Kitchen Helper	Counter-person	Waiter/Waitress
6. (Cont'd.)								
(26) steamer - high pressure		7	E	1.5	X	X		
(27) steamer - low pressure		7	E	1.5	X	X		
(28) steamer - zero p.s.i. (pounds per square inch)		7	E	1	X	X		
(29) tilting skillet		7	E	1.75	X	X		
(30) toasters and toaster ovens		7	E	.5	X	X	X	X
(31) VCM (vertical cutter/mixer)		7	E	4.5	X	X		
7. Schedule food preparation tasks.		2	A	2.5	X	X	X	
B. Skills Used in Job Execution (Production)								
1. Throughout all food preparation and production tasks, follow appropriate sanitation practices.								
(1) maintain proper personal hygiene (body hands, clothing, cosmetics) (2) control microorganisms (bacteria, mold, yeasts) (3) observe food handling laws (4) clean equipment (5) clean facilities		7	E	9.75	X	X	X	X
(6) identify and discard unwholesome or adulterated foods (7) utilize leftovers		7	E	6.5	X	X	X	X

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Kitchen Helper	Counter-person	Waiter/ Waitress
2. Prepare foodstuffs for cooking.								
(1) assemble specific ingredients and equipment, weigh and measure (dry, liquid)		7	E	4	X	X	X	
(2) prepare food for cook's use:								
a) bone								
1- meat		4	A	6	X	X		
2- fish		4	A	2	X	X		
3- poultry		4	A	3	X	X		
b) bread (meat, fish, poultry)		7	E	1.5	X	X	X	
c) pre-portion		7	E	3	X	X	X	
d) fruits (wash, peel, cut, etc.)		7	E	1.5	X	X	X	
e) grind (meat, poultry, cheese)		7	E	1.5	X	X	X	
f) pre-cook (sautée, parboil, brown, sear, etc.)		7	E	7.5	X	X	X	
g) season		7	E	3.75	X	X	X	
h) slice (meat, poultry, cheese)								
1- slicer		7	E	2	X	X	X	
2- hand carving		7	E	4	X	X	X	
i) vegetables (wash, peel, cut, etc.)		7	E	5	X	X	X	

Short-Order Cook Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Kitchen Helper	Counter-person	Waiter/ Waitress
3. Cook designated menu items.								
(1) convenience foods (including dehydrated or concentrated foods)		7	E	3	X	X	X	
(2) eggs								
a) fried		7	E	1.75	X	X	X	
b) omelet		7	E	2	X	X	X	
c) poached		7	E	1.5	X	X	X	
d) scrambled		7	E	1	X	X	X	
(3) French Toast		7	E	1	X	X	X	
(4) fruits		7	E	2	X	X	X	
(5) hot beverages (cocoa, coffee, tea)		7	E	3	X	X	X	X
(6) hot cereals		7	E	1	X	X	X	

Short-Order Cook Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Kitchen Helper	Counter-person	Waiter/ Waitress
(7) meats (beef, lamb, pork, veal)								
a) bake/roast		7	E/A	3	X	X	X	
b) barbecue		7	E/A	2	X	X	X	
c) braise		7	E/A	2.5	X	X	X	
d) broil		7	E/A	1.75	X	X	X	
e) combination cooking		7	E/A	3	X	X	X	
f) fry and deep fry		7	E/A	2.5	X	X	X	
g) poach		7	E/A	1	X	X	X	
(8) pancakes and waffles		7	E/A	1.75	X	X	X	
(9) pasta (rices, macaroni, spaghetti, noodles)		7	E/A	3	X	X	X	
(10) poultry (chicken, turkey, duckling, game)								
a) bake/roast		7	E/A	2.75	X	X	X	
b) barbecue		7	E/A	2	X	X	X	
c) braise		7	E/A	2	X	X	X	
d) broil		7	E/A	1.75	X	X	X	

Short-Order Cook Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Kitchen Helper	Counter-person	Waiter/ Waitress
(10) (Cont'd.)								
e) combination cooking		7	E/A	3	X	X	X	
f) fry and deep fry		7	E/A	2	X	X	X	
g) poach		7	E/A	1	X	X	X	
(11) salad dressings (basic, Italian, Russian, sour cream, fruit, cooked, emulsified)		4	E/A	4	X	X	X	
(12) salads (green, gelatin, fruit and vegetable)		7	E	12	X	X	X	
(13) sandwiches (hot, cold, spreads and fillings)		7	E	6	X	X	X	
(14) sauces								
a) brown		2	A	4	X	X	X	
b) bechamel		2	A	2.5	X	X	X	
c) tomato		2	A	2.5	X	X	X	
d) veloute		2	A	2.5	X	X	X	
e) hollandaise		2	A	2	X	X	X	
f) dessert		2	A	1.5	X	X	X	
g) gravies		2	A	2.75	X	X	X	
h) glazes		2	A	2	X	X	X	
i) roux		2	A	2.5	X	X	X	

Short-Order Cook Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Kitchen Helper	Counter-person	Waiter/ Waitress
(15) seafood (fin, fresh water, shellfish, mollusks)								
a) bake		7	E/A	1	X	X	X	
b) broil		7	E/A	1.25	X	X	X	
c) combination cooking		7	E/A	2.25	X	X	X	
d) fry and deep fry		7	E/A	1.5	X	X	X	
e) poach		7	E/A	1.75	X	X	X	
f) sautée		7	E/A	3	X	X	X	
g) steam		7	E/A	1	X	X	X	
(16) soups								
a) thick		7	E/A	2.75	X	X	X	
b) bisques and chowders		7	E/A	4.5	X	X	X	
c) consommés		7	E/A	3.5	X	X	X	
d) aspic		7	E/A	2.5	X	X	X	
e) minestrone		7	E/A	3	X	X	X	
f) gazpacho		7	E/A	2	X	X	X	
g) vichyssoise		7	E/A	3	X	X	X	

Short-Order Cook Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations: Cook	Kitchen Helper	Counter-person	Waiter/ Waitress
(17) stocks								
a) brown		3	E/A	2	X	X	X	
b) fish		3	E/A	1.5	X	X	X	
c) chicken		3	E/A	2	X	X	X	
d) vegetable		3	E/A	1.5	X	X	X	
(18) vegetables (green, red, yellow, white)								
a) au gratin		7	E	2	X	X	X	
b) bake		7	E	2	X	X	X	
c) boil		7	E	2	X	X	X	
d) broil		7	E	1	X	X	X	
e) combination cooking		7	E	2	X	X	X	
f) fry and deep fry		7	E	2	X	X	X	
g) parboil		7	E	1	X	X	X	
h) sautée		7	E	1.5	X	X	X	
i) steam		7	E	1.25	X	X	X	
(19) vegetarian specialty items		3	E/A	3	X	X	X	
4. Clean up and sanitize on an intermediate/ continual basis.								
(1) wash		7	E	1.25	X	X	X	X
(2) sanitize		7	E	1.75	X	X	X	X

Short-Order Cook Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Kitchen Helper	Counter-person	Waiter/ Waitress
5. Prepare food for serving.								
(1) arrange food for service (merchandize)		7	E/A	1.25	X	X	X	
(2) cut portions (pre-portion, portion control)		7	E	1.25	X	X		
(3) dish desserts		4	E	2	X	X	X	X
(4) fill containers		7	E	1	X	X	X	
(5) garnish		7	E/A	2.25	X	X	X	
(6) ladling techniques		7	E	.75	X	X	X	X
(7) plate cakes and pies		7	E	1	X	X	X	X
(8) proper holding techniques								
a) holding temperatures		7	E	2	X	X	X	X
b) codes, rules and regulations		7	E	2.5	X	X	X	X
(9) slice (automatic, gravity feed and hand)		7	E	3.5	X	X	X	
(10) trim fat from meats		7	E	1.25	X	X	X	
6. Obey safety rules when using equipment and tools in order to prevent:								
(1) falls		7	E	1	X	X	X	X
(2) choking (Heimlich maneuver)		7	E	1.5	X	X	X	X
(3) cuts		7	E	1.25	X	X	X	X
(4) burns		7	E	1	X	X	X	X

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Kitchen Helper	Counter-person	Waiter/ Waitress
6. (Cont'd).								
(5) strains		7	E	1	X	X	X	X
(6) shocks		7	E	2	X	X	X	X
(7) explosions and fires		7	E	2	X	X	X	X
7. Monitor and supervise production.								
(1) evaluate foods by:								
a) tasting and smelling		7	E/A	2.5	X	X	X	
b) piercing		7	E/A	1.5	X	X	X	
c) viewing		7	E/A	2	X	X	X	X
d) feeling		7	E/A	2	X	X	X	
(2) calculate food waste (monitor and record leftovers)		7	E	3	X	X	X	
C. Skills Used Following Job Execution (Follow Up)								
1. Transfer prepared food to serving location.								
(1) place prepared food items in temporary storage		7	E	2	X	X	X	X
(2) set up buffet table		7	E	1.5	X	X	X	X
(3) set up serving counter (cafeteria style)		7	E	1.75	X	X	X	X

Short-Order Cook Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Kitchen Helper	Counter-person	Waiter/Waitress
1. (Cont'd.)								
(4) maintain time and temperature controls		7	E	1.75	X	X	X	X
2. Store unused foodstuffs.								
(1) collect, gather and prepare leftovers for storage (cover, date, label items, etc.)		7	E	2	X	X	X	X
(2) follow proper storage techniques								
a) stock rotation		7	E	2	X	X	X	X
b) temperature controls		7	E	1.5	X	X	X	X
3. Clean and/or store equipment and tools in accord with safety rules and sanitation procedures.								
(1) clean and properly sanitize:								
a) broilers		7	E	1	X	X	X	
b) coffee urn and bunamatic		7	E	1.25	X	X	X	X
c) counters		7	E	1	X	X	X	X
d) deep fat fryers		7	E	1.75	X	X	X	
e) food trucks		7	E	1	X	X	X	X
f) grills		7	E	1.25	X	X	X	
g) hoods and filters		7	E	1.75	X	X	X	
h) hot tables		7	E	1	X	X	X	X

Short-Order Cook Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Cook	Kitchen Helper	Counter-person	Waiter/ Waitress
i) kettles		7	E	1.5	X	X	X	
j) ovens		7	E	1	X	X	X	
k) ranges		7	E	1	X	X	X	
l) refrigerators		7	E	1	X	X	X	X
m) steam equipment		7	E	1.25	X	X	X	
n) work tables		7	E	1.5	X	X	X	X
(2) maintain safe and sanitary working conditions (proper ventilation, fire extinguisher, first aid kit, fire blankets, etc.)		7	E	2	X	X	X	X
(3) check conditions, quantity and rotation of goods and foodstuffs in storage areas		7	E	2.25	X	X	X	
4. Monitor, supervise and evaluate								
(1) guest comments		4	E	1	X	X	X	X
(2) safety practices		7	E	.75	X	X	X	X
(3) sanitation practices		7	E	1	X	X	X	X

Occupational Skills for Counterperson

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Cook	Waiter/ Waitress
A. Skills Used Prior to Job Execution (Planning and Organization)								
1. Follow appropriate sanitation procedures prior to job execution. (1) body (2) clothing (3) cosmetics		7	E	.5	X	X	X	X
2. Procure foodstuffs from steward or storeroom. (1) determine foodstuffs on hand (2) determine foodstuffs required (3) order foodstuffs		5	E	5	X	X	X	
3. Receive, store and inventory foodstuffs. (1) receive/assemble (record, inspect, report) (2) store (rotate stock) (3) inventory		4	E	14	X	X	X	
4. Set up stations for food preparation. (1) assemble supplies and foodstuffs		7	E	2.5	X	X	X	X

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Cook	Waiter/ Waitress
(2) organize equipment bank station(s)								
a) oven(s) b) steam table(s)		7	E	1.5	X	X	X	
(3) organize pantry station(s)								
a) beverages		7	E	.5	X	X	X	X
b) desserts		7	E	.5	X	X	X	X
c) salads		7	E	1.5	X	X	X	X
(4) organize serving station(s)								
a) condiments		7	E	1	X			X
b) serving pieces		7	E	1	X			X
c) tableware and linens		7	E	1	X			X
d) water service		7	E	.75	X			X
5. Identify and understand the use and care of all major and minor kitchen equipment.								
(1) blender		4	E	1	X	X	X	X
(2) bunwarmer		7	E	.5	X	X	X	X
(3) can openers		7	E	.5	X	X	X	X
(4) cash register		7	E	3				X
(5) coffee urn and/or coffeemaker		7	E	1.5	X	X	X	X
(6) dishwashing machine		7	E	1.5	X	X	X	X
(7) French knives		3	E	3	X	X	X	X
(8) hot plates or coffee warmers		7	E	.5	X	X	X	X
(9) miscellaneous small tools (peelers, ice cream scoop, etc.)		7	E	3.5	X	X	X	X
(10) ovens (conventional, micro-wave, convection)		7	E	3.5	X	X	X	X
(11) refrigerators		7	E	1	X	X	X	X

Counterperson Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Cook	Waiter/ Waitress
5. (Cont'd.)								
(12) roll warmer		7	E	.5	X	X	X	X
(13) scales								
a) spring		7	E	.5	X	X	X	X
(14) slicer (automatic, gravity feed)		4	E	1.5	X	X	X	
(15) toasters and toaster ovens		7	E	.5	X	X	X	X
6. Monitor planning and organization.								
(1) check tableware, serving pieces and glasses for stains before using		7	E	1.25	X	X	X	X
B. Skills Used in Job Execution (Production)								
1. Throughout all food preparation and production tasks, follow appropriate sanitation practices.								
(1) maintain proper personal hygiene (body, hands, clothing, cosmetics)		7	E	9.75	X	X	X	X
(2) control microorganisms (bacteria, mold, yeasts)								
(3) observe food handling laws								
(4) clean equipment								
(5) clean facilities								
(6) identify and discard unwholesome or adulterated foods		7	E	6.5	X	X	X	X

Counterperson Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations: Kitchen Helper	Related Occupations: Short-Order Cook	Related Occupations: Cook	Related Occupations: Waiter/ Waitress
2. Prepare foodstuffs and supplies for use.								
(1) assemble specific ingredients and equipment, weigh and measure (dry, liquid)		7	E	4	X	X	X	
(2) prepare food for cook's use:								
a) pre-portion		7	E	3	X	X	X	
b) fruits (wash, peel, cut, etc.)		7	E	1.5	X	X	X	
c) slice (meat, poultry, cheese)								
1- slicer		7	E	2	X	X	X	
2- hand carving		7	E	4	X	X	X	
d) vegetables (wash, peel, cut, etc.)		7	E	5	X	X	X	
3. Cook designated menu items.								
(1) convenience foods (including dehydrated or concentrated foods)		7	E	3	X	X	X	
(2) hot beverages (cocoa, coffee, tea)		7	E	3	X	X	X	X
(3) sandwiches (hot, cold, spreads and fillings)		3	E	6	X	X	X	
4. Clean up and sanitize on an intermediate/ continual basis.								
(1) wash		7	E	1.25	X	X	X	X
(2) sanitize		7	E	1.75	X	X	X	X

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Cook	Waiter/ Waitress
5. Prepare food for serving.								
(1) arrange food for service (merchandize)		7	E/A	1.25	X	X	X	
(2) cut portions (pre-portion, portion control)		7	E	1.25	X	X		
(3) dish desserts		4	E	2	X	X	X	X
(4) fill containers		7	E	1	X	X	X	
(5) garnish		7	E/A	2.25	X	X	X	
(6) ladling techniques		7	E	.75	X	X	X	X
(7) plate cakes and pies		4	E	1	X	X	X	X
(8) proper holding techniques								
a) holding temperatures		7	E	2	X	X	X	X
b) codes, rules and regulations		7	E	2.5	X	X	X	X
(9) slice (automatic, gravity feed and hand)		7	E	3.5	X	X	X	
(10) trim, cut and shred fruits and vegetables		3	E	1.25	X	X	X	
6. Prepare food for serving. Portion or serve the following foods:								
(1) beverages (hot & cold, including coffees with liquer, Spanish coffee, flaming coffees and Irish coffee)		7	E	1.5	X	X	X	X
(2) bread, rolls		7	E	.5	X	X	X	X

Counterperson Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations Kitchen Helper	Short-Order Cook	Cook	Waiter/ Waitress
6. (Cont'd.)								
(3) butter		7	E	.5	X	X	X	X
(4) cereals		7	E	.5	X	X	X	X
(5) desserts		7	E	1	X	X	X	X
(6) garnishes or relishes		7	E	1	X	X	X	X
(7) juices		7	E	.5	X	X	X	X
(8) meats		4	E	1	X	X	X	X
(9) salads		7	E	1	X	X	X	X
(10) salad dressings		7	E	.75	X	X	X	X
(11) soups (hot and cold)		7	E	.5	X	X	X	X
(12) take-out foods (including wrapping and packaging)		7	E	1	X	X	X	X
7. Obey safety rules when using equipment and tools in order to prevent:								
(1) falls		7	E	1	X	X	X	X
(2) choking (Heimlich maneuver)		7	E	1.5	X	X	X	X
(3) cuts		7	E	1.25	X	X	X	X
(4) burns		7	E	1	X	X	X	X
(5) strains		7	E	1	X	X	X	X
(6) shocks		7	E	2	X	X	X	X

Counterperson Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Cook	Waiter/ Waitress
7. (Cont'd.)								
(7) explosions and fires		7	E	2	X	X	X	X
8. Monitor and supervise production.								
(1) evaluate foods by:								
a) tasting and smelling		7	E/A	2.5	X	X	X	
b) piercing		7	E/A	1.5	X	X	X	
c) viewing		7	E/A	2	X	X	X	X
d) feeling		7	E/A	2	X	X	X	
(2) calculate food waste (monitor and record leftovers)		7	E	3	X	X	X	
C. Skills Used Following Job Execution (Follow Up)								
1. Transfer prepared food to serving location.								
(1) place prepared food items in temporary storage		7	E	2	X	X	X	X
(2) set up buffet table		7	E	1.5	X	X	X	X
(3) set up serving counter (cafeteria style)		7	E	1.75	X	X	X	X
(4) maintain time and temperature controls		7	E	1.75	X	X	X	X
2. Store unused foodstuffs.								
(1) collect, gather and prepare leftovers for storage (cover, date, label items, etc.)		7	E	2	X	X	X	X

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Cook	Waiter/ Waitress
2. (Cont'd)								
(2) follow proper storage techniques								
a) stock rotation		7	E	2	X	X	X	X
b) temperature controls		7	E	1.5	X	X	X	X
3. Clean and/or store equipment and tools in accord with safety rules and sanitation procedures.								
(1) clean and properly sanitize:								
a) coffee urn and bunamatic		7	E	1.25	X	X	X	X
b) counters		7	E	1	X	X	X	X
c) hot tables		7	E	1	X	X	X	X
d) ovens		7	E	1	X	X	X	
e) refrigerators		7	E	1	X	X	X	X
f) steam equipment		7	E	1.25	X	X	X	
g) work tables		7	E	1.5	X	X	X	X
(2) maintain safe and sanitary working conditions (proper ventilation, fire extinguisher, first aid kit, fire blankets, etc.)		7	E	2	X	X	X	X
(3) check conditions, quantity and rotation of goods and foodstuffs in storage areas		7	E	2.25	X	X	X	

Counterperson Cont'd.

	Checklist	Relative Importance (1-7)	Entry Level (E) or Advanced (A)	Training Time Expressed In Hours	Related Occupations			
					Kitchen Helper	Short-Order Cook	Cook	Waiter/ Waitress
4. Monitor, supervise and evaluate								
(1) guest comments		7	E	1	X	X	X	X
(2) production (serving) procedures (including self-evaluation)		7	E	1			X	
(3) safety practices		7	E	.75	X	X	X	X
(4) sanitation practices		7	E	1	X	X	X	X

Field Test for the Implementation of Task Structures and Training-Time Standards for Cooperative Vocational Education

311.

I. Introduction

During the 1979-1980 school year Metis Associates developed a methodology for constructing occupational task structures and training-time standards, and applied this methodology to constructing task structures and time standards for a sample of five occupations within the food services trades. In addition, a number of preliminary procedures for utilizing these management tools have been designed (see Final Report: The Development of Occupational Task Structures and Training-Time Standards for Cooperative Vocational Education).

The initial construction of these tools could be the first step towards the development of a comprehensive cooperative work experience education delivery system for the State of Connecticut. Particularly now, with the added incentive of federal and state targeted jobs tax credits available for employers of cooperative students, it is extremely important to cultivate worthwhile training stations to assure the future quality of cooperative programs.

In this document, an important follow-up activity is addressed. Metis Associates strongly recommends that a field test be executed prior to carrying out any further development of task structures and training-time standards because the results of the field test would reveal ways to strengthen the methodology for developing and utilizing the management tools. The methodology and format should be tested in the field and, where necessary, revised before large-scale implementation is carried out. Once these revisions are made, then teacher-coordinators should receive appropriate in-service training in the use of these tools.

Metis Associates has designed a field test in order to identify problems in using the management tools, and to assess the extent to which the management tools can be effective in helping teacher-coordinators to establish a greater training emphasis at their training stations.

II. Field Test Objectives

The overarching objective is to demonstrate, through a field test, the utility of occupational task structures and training-time standards for improving the quality of students' out-of-school training experiences.

Specific product (summative) and process (formative) objectives are listed below. The activities suggested to meet the objectives follow in Section III - Field Test Design. A discussion of these objectives ard the design for their evaluation are found in Section IV - Evaluation.

Product (summative) objectives

Product (summative) objectives are included in order to allow for summary judgments about the effectiveness of the task structure and training-time standards for managing the content and pacing of student training at out-of-school training stations.

1. Task Structure. As a result of their participation in the field test demonstration, and, specifically as a result of their use of the food services task structure for developing student training plans, teacher-coordinators will manage the content of training at their food services training stations better than they were able to without benefit of the task structure. This objective will be evaluated via independent content analyses of pre- and post-intervention student training plans (see Evaluation).

2. Training-Time Standards. As a result of their participation in the field test demonstration, and specifically, as a result of their use of objective training-time standards, teacher-coordinators will manage the pacing of training at their food services training stations better than they would without benefit of the training-time standards. This objective will be evaluated via comparative analyses of obtained training durations when training-time standards are and are not available for use by teacher-coordinators (see Evaluation).

Process (formative) objectives

A process (formative) objective is included in order to collect information that can be used primarily for ongoing program development and improvement.

Quality. The perceived value and utility of the products (e.g., task structure, training-time standards) can be assessed through questionnaires. It is anticipated that at least 75 percent of the participants (teacher-coordinators, employers, and students) will indicate that the procedures and products made a valuable contribution toward improving the quality of the out-of-school training experience (see Evaluation).

III. Field Test Design

1. General Design

Metis Associates recommends that a three-phase field test be conducted to demonstrate the utility of occupational task structures and training time standards. A general outline of this three-phase project, together with a listing of the major activities to be performed during each phase, is presented below.

Phase I: Pre-Implementation

- I.1. Establishment of advisory committee
- I.2. Instrument development
- I.3. Sample selection
- I.4. Materials development ("first generation")
- I.5. Staff orientation

Phase II: Implementation

- II.1 Project management
- II.2. Data collection

Phase III: Post-Implementation

- III.1. Data analysis
- III.2. Synthesis and review of findings
- III.3. Structural modifications
- III.4. Procedural modifications
- III.5. Materials development ("second generation")

2. Project Activities

The following section contains a description of each of the major activities listed in the general outline above.

Activity I.1. Establishment of a Project Advisory/ Evaluation Committee (PAEC)

At the start of the field test, a PAEC should be formed. The PAEC might include a representative of the Division of Vocational Education, a Cooperative Work Experience for Diversified Occupations (CWE-DO) teacher-coordinator, a chamber of commerce and/or trade association representative, a CWE-DO student, and such representatives as the Division of Vocational Education may designate. Early and continuous collaboration among these various groups is an essential ingredient in the formulation, implementation and evaluation of a successful field test.

Activity I.2. Instrument Development

A number of instruments will need to be developed to support the evaluation of the field test (see Evaluation). Among the instruments to be developed are structured interview questionnaires (for teacher-coordinators, employers and students), a field test observation checklist, and student time-on-task record forms.

The interview questionnaires for teacher-coordinators should be designed to elicit, among other things, information concerning:

- The extent to which the management tools helped them to establish and maintain an appropriate emphasis on training content at the training stations;
- The extent to which the management tools helped them to manage the pacing of training at the training stations;
- Perceptions about the employer's receptivity to the use, by teacher-coordinators, of the management tools;

- Which components of the management tools were most (and least) helpful;
- Specific problems encountered while using the management tools;
- Unanticipated outcomes; and
- Suggestions for structural and procedural revisions.

Interview questionnaires for employers (supervisors) should be designed to elicit, among other things, information concerning:

- The validity of the content of the task structure (including such task specifications as relative importance and level);
- The appropriateness of the time-on-task estimates;
- Perceptions about the utility of the management tools for organizing and pacing student training experiences;
- Unanticipated outcomes; and
- Suggestions for structural and procedural revisions.

Interview questionnaires for students should be designed to elicit, among other things, opinions concerning:

- The appropriateness of the content and pacing of their training;
- The comprehensiveness of the combined classroom and work experience components;
- The extent to which the training plan and training program reflect their individual needs and abilities;
- Progress made towards meeting occupational goals;
- Program strengths and weaknesses;
- Unanticipated outcomes; and
- Suggestions for structural and procedural revisions.

An observation checklist should be designed in order to systematically record observers' opinions and observations of the field test. The checklist should be at least partly open-eneded to provide space for general comments regarding the observations. Specific items should be included in order to record opinions regarding such things as:

- Attitudes of the supervisor and other workers toward the student;
- Student interest and motivation in the training activities;
- The appropriateness of the specific tasks in which the student is engaged; and
- The quality of supervision and training.

Finally, a student time-on-task record form should be designed in order to record actual time spent by students in training to master the specific tasks contained within their individual training plans. Time spent on tasks not included in the training plans will also be recorded so that all elapsed time at the training stations can be accounted for in the evaluation.

Activity I.3. Sample Selection

It makes sense that, when a new set of management tools is undergoing development, few teacher-coordinators be used to try out first drafts. We suggest restricting the number of teacher-coordinators in this case because we do not know as yet if the tools are any good and thus we want to limit the potential damage it might do. Assuming success during the field test, more teacher-coordinators would eventually be involved after they've received appropriate inservice training. Therefore, the general guideline for the selection of a sample for this field test is to select the minimum number of teacher-coordinators necessary to insure that all of the purposes (objectives) of the field test can be satisfied. Specifically, requirements for the sample of teacher-coordinators would include:

- Occupational representativeness. In the aggregate, students of participating teacher-coordinators should have training station placements that coincide with each of the various occupations that appear in the task structure cluster (i.e., cook, waiter/waitress, kitchen helper, short-order cook, and counter person).
- Setting representativeness. The different types of food services establishments should be represented in the sample of training stations (e.g., family restaurant, fast food restaurant, etc.).
- Student representativeness. A sufficient number of students would have to be represented in the sample of training station placements to allow individual differences (e.g, in ability, in interest, etc.) to operate.
- Geographical representativeness. The sample of training stations should reflect the mix of food services job market opportunities throughout the entire state.

The above requirements may be applied to the fall, 1980 population of CWE-DO teacher-coordinators from whom the field test sample can be selected. A review of current data indicates that one can anticipate that at least five teacher-coordinators (with a diversity of food services placements) should participate in the field test.

Activity I.4. Materials Development

Following sample selection (Activity I.3.), a sufficient supply of task structures, training-time standards, evaluation instruments and general project orientation materials should be prepared for the implementation of the field test.

Activity I.5. Staff Orientation

Prior to the implementation of the field test, the participating teacher-coordinators should receive training in the use and function of the materials that they will be testing. It is particularly important that a number of key issues be treated during orientation. These include:

- Procedures for using the tools to negotiate training plans;
- Procedures for monitoring the content and pacing of training; and
- Procedures for promoting individualized training.

Activity II.1. Project Management

The most central focus of the project management activities will be to insure that the participating teacher-coordinators are attempting to utilize the task structure and training-time standards to develop individualized student training plans and to monitor the content and pacing of training. Throughout the implementation phase, the Department should be available to provide technical assistance and respond to questions and concerns as they arise.

Activity II.2. Data Collection

Product data collection activities should include:

- The collection of training plans developed by participating teacher-coordinators both prior to and following the introduction of task structures and training-time standards; and
- The collection of student time-on-task record forms from students of participating teacher-coordinators.

Process data collection activities should include:

- Interviews with participating teacher-coordinators, employers (supervisors) and students; and
- Periodic observations of participating students at their training stations.

Activity III.1. Data Analysis

In accordance with the procedures described in Section IV - Evaluation, data from the administration of the interviews, formal observations and student time-on-task records should be analyzed. In addition, content analyses of pre- and post-intervention student training plans should be carried out by the Project/Advisory Evaluation Committee (PAEC). This activity should be managed and coordinated by the Department.

Activity III.2. Synthesis and Review of Findings

Results of the analyses conducted during Activity III.1 should be synthesized and organized for workshop review and discussions with the PAEC. Emerging from these discussions will be a set of recommendations for structural and procedural modifications in the management tools and in the procedures for their development and use.

Activity III.3. Structural Modifications

Recommendations from the PAEC (Activity III.2.) should be used by the Department to develop tentative structural modifications for the task structures and training-time standards. These modifications might include:

- Format changes.
- Task specification changes (e.g., relative importance, location of training, etc.).
- Task additions and/or deletions.
- Wording changes.
- Time estimate adjustments.
- Time standard format changes (e.g., ranges, ratios, etc.).

Suggested structural modifications should be reviewed by the PAEC before they are incorporated into materials for dissemination.

Activity III.4. Procedural Modifications

The Department should utilize recommendations from the PAEC (Activity III.2.) to develop tentative procedural modifications for the development and use of the task structures and training-time standards.

The following are among the procedures that might be modified for developing subsequent task structures and training-time standards:

- Needs analysis procedures.
- Procedures for collecting and reviewing existing materials.
- Procedures for selecting occupations.
- Procedures for constructing task structures from existing materials and expert appraisals.
- Procedures for estimating training time.

The following are among the procedures that might be modified for using task structures and training-time standards in the field:

- Procedures for developing individualized student training plans;
- Procedures for monitoring and managing the content and pacing of training at training stations; and
- Procedures for identifying and making effective use of training stations.

Activity III.5. Materials Development ("second generation")

Following review by the PAEC of the tentative structural modifications (Activity III.3.), the Department should develop a revised ("second generation") set of task structures and training-time standards for the five occupations in the food services cluster. These revised materials should then be utilized in broader dissemination activities.

IV. Evaluation

Discussion of Objectives

The field test is meant to demonstrate the utility of occupational task structures and training-time standards for improving the quality of students' out-of-school training experiences. Two specific product (summative) objectives have been developed in order to allow for summary judgments about the effectiveness of the management tools for helping teacher-coordinators to better manage the content and pacing of student training.

Product objective 1 - improved management of training content - links the task structure with the development of individual student training plans. It is anticipated that teacher-coordinators who participate in the field test will use the food services task structures to negotiate training plans for their students. The training plans obtained in this way should contain more specific training objectives and be more tailored to the individual needs of the student and to conditions at the out-of-school training stations than training plans developed in prior years.

Product objective 2 - improved management of the pacing of training - links training-time standards to actual time-on-task student performance. It is anticipated that when training-time standards are available to participating teacher-coordinators, they will use them to help manage the duration of training for mastery of specific objectives or sets of objectives.

The developmental nature of the proposed work requires that a process (formative) evaluation objective also be utilized throughout the field test. The process objective - to demonstrate the value and utility of the products - can be assessed primarily by asking the users of the management tools (i.e., teacher-coordinators, employers, and students) for their personal perceptions. What does the program look like and feel like to the people involved? What are the experiences of program participants? What thoughts do people knowledgeable about the program have concerning program operations and outcomes? What are their expectations? What features are most salient to the people involved? What changes do participants perceive in themselves as a result of their involvement in the program?

In addition, much can be learned by observing the manner and timing of project activities. What is the chronological sequence of events? Is this chronology appropriate? How are activities initiated? Who is involved? What are the variations from setting to setting? What are the implications for program modification?

Evaluation Design Considerations

Product Evaluation

Two approaches to evaluation are suggested by the product objectives. For the first objective, pre- and post-intervention, student training plans can be used unobtrusively to provide information about the content of training before and after the introduction of occupational task structures. Pairs of 1979-1980 and 1980-1981 training plans, matched on the basis of training station, teacher-coordinators and student ability, can be collected for content analysis by the PAEC. At the start of Phase III of the field test, the PAEC can meet to determine:

- Criteria for suitable training plan contents;
- How these criteria should be defined;
- How these criteria should be applied; and
- What the limitations are.

The PAEC will need to recognize and understand the implications of the assumptions they are making when they develop criteria, and they will need to amplify and detail their criteria as much as possible to assure reliable results. Once this is accomplished, then all identifying information (e.g., location, date, coordinator, student) should be removed from the training plans, and the plans can be given to the PAEC for content analysis. It can be anticipated that the content of the 1980-1981 training plans will be rated significantly more appropriate for training than their 1979-1980 counterparts.

For the second objective, participating teacher-coordinators can be provided with training-time standards for a random sample of the tasks contained in the occupational task structure. They could then use the task structure to negotiate training plans with employers. This will result in training plans that contain tasks with and without time estimates. During the field test, student time-on-task record forms can be used to elicit information from students regarding the expenditure of their time at the out-of-school training locations. The record forms will link training times to the specific tasks in the student training plans. Following the field test, repeated measures analysis of variance can be performed on the mean difference between time-on-task and training-time standards when training-time standards are (experimental condition) and are not (control condition) available to the teacher-coordinators. It can be anticipated that the mean difference in the control condition will significantly exceed the mean difference in the experimental condition. In other words, the availability of training-time standards enhances the teacher-coordinators' ability to manage the pacing of training.

Process evaluation

Data for the evaluation of the process objective can be collected on the interview and observation instruments described in Section III, Activity I.2.

Interviews with all participating teacher-coordinators can be conducted at the beginning and at the end of the field test. A representative sample of employers and students can be interviewed at the end of the field test. Field test observations of a sample of training stations can be conducted periodically throughout the field test. Data from the interviews and observations can be utilized to assess perceptions of the quality and utility of the management tools as well as the logistics of their use. In addition, each of the questionnaires should contain an item that asks the respondents to indicate whether or not they believe the procedures and products used during the field test made a valuable contribution toward improving the quality of the out-of-school training experience. Frequency distributions of the responses to this item can be used to determine whether or not the criterion (that 75 percent of each group of participants believed the procedures and products did make a valuable contribution) had been achieved.